حمل الآن

مجانا وحصريا

امتحانات رقم (1)







2025

1 Cairo Governorate



El-Zitoun Zone
Math's Supervision



Interactive test ①

First Multiple choice questions

Choose the correct answer from those given :

(1) A regular triangular pyramid , its base length 6 cm. and its height length 12 cm. , then its volume = ………….. cm^3.

(a) $12\sqrt{3}$ (b) $24\sqrt{3}$ (c) $36\sqrt{3}$ (d) $72\sqrt{3}$

(2) The radius length of the circle whose equation : $2x^2 + 2y^2 + 12x - 32 = 0$ is ………….. length unit.

(a) 3 (b) 4 (c) 5 (d) 8

(3) In the opposite figure :

ABCD is a rectangle , AB = 6 cm. , BC = 8 cm. , forces of magnitude , 4 , 5 , 9 newton act along $\overrightarrow{CB}$, $\overrightarrow{CA}$, $\overrightarrow{DC}$ respectively , then magnitude of the resultant = ………….. newton.

(a) 16 (b) 10
(c) 12 (d) 14

(4) In the opposite figure :

$\overline{AB}$ is a uniform rod connected to a hinge at point A in the wall if the rod is kept in equilibrium by horizontal force act at B , then m ($\angle \theta$) = …………..°



(a) 30 (b) 45 (c) 60 (d) 75

(5) Two forces act at a point the magnitude of the two forces 6 , 8 newton and the measure of the included angle between them $\theta \in \left[0 , \frac{\pi}{2}\right[$, then the magnitude of their resultant could be equal ………….. newton.

(a) 5 (b) 10 (c) 12 (d) 16

(6) The area of the circle whose equation $x^2 + y^2 = \pi$ equals ………….. square unit

(a) π (b) 2π (c) 3π (d) π^2

(7) A regular quadrilateral pyramid , its base length 10 cm. and its slant height 13 cm. , then its volume = ………….. cm^3.

(a) 400 (b) 300 (c) 200 (d) 100

(8) A right circular cone where its height length 4 cm. and the length of its drawer 5 cm. , then its volume = ... cm^3

(a) 12π (b) 15π (c) 24π (d) 36π

(9) In the opposite figure :

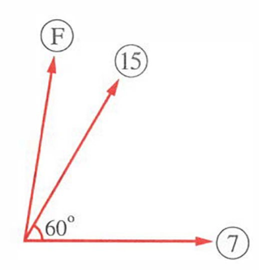
$M \notin$ plane ABC

, then the plane MAB $\cap$ the plane ABC = ...

(a) $\varnothing$ (b) $\overline{AB}$

(c) $\{M\}$ (d) $\overleftrightarrow{AB}$

(10) In the opposite figure :



The force 15 newton is resolved into two components 7 and F newton

, then F = ... newton

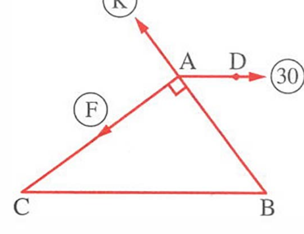
(a) 5 (b) 7

(c) 13 (d) 18

(11) Two forces act at a point the magnitude of the two forces (3F – 8) , F newton and their resultant bisects the included angle between them , then F = ... newton

(a) 2 (b) 4 (c) 6 (d) 8

(12) In the opposite figure :



$\overrightarrow{AD} \parallel \overline{BC}$, $\frac{AB}{AC} = \frac{3}{4}$

If the forces are equilibrium , then F + K = ...

(a) 16 (b) 21

(c) 32 (d) 42

(13) A triangular regular faces pyramid , its edge length 6 cm. , then total area = ... cm^2

(a) $9\sqrt{3}$ (b) $12\sqrt{3}$ (c) $36\sqrt{3}$ (d) $72\sqrt{3}$

(14) Two forces act at a point their magnitude F , K newton where F > K and their resultant is R where $R \in [2 , 7]$, then $F^2 - K^2$ = ...

(a) 9 (b) 14 (c) 5 (d) 4.5

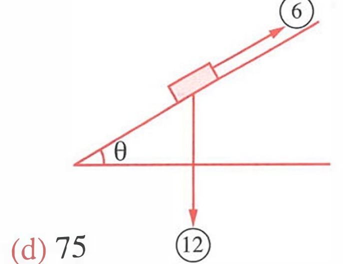
(15) Two forces act at a point their magnitude (3 F – 5) , (5 – F) newton and their resultant is 2 F , then the measure of the angle between them = ...°

(a) zero (b) 45 (c) 90 (d) 180

(16) If $\overrightarrow{F_1} = 4\overrightarrow{i}$, $\overrightarrow{F_2} = 3\overrightarrow{j}$ and $\overrightarrow{F_3} = \overrightarrow{i} + 9\overrightarrow{j}$, then $\|\overrightarrow{R}\|$ = ... force unit

(a) 6 (b) 10 (c) 13 (d) 15

(17) If a body of weight (12 kg.wt.) is placed on a smooth plane inclined to horizontal plane it is kept in equilibrium by force 6 newton in the direction of the plane upward , then m ($\angle$ θ) = ...°

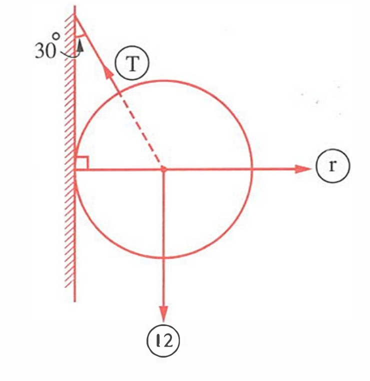


(a) 30 (b) 45 (c) 60 (d) 75

(18) In the opposite figure :

The smooth sphere of weight 12 newton rests against a smooth vertical wall , if the string makes with the vertical an angle of measure 30°

, then in case of equilibrium T – r = ... newton.



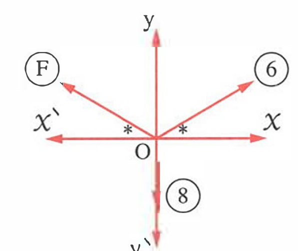
(a) 4

(b) $4\sqrt{3}$

(c) 8

(d) $8\sqrt{3}$

(19) If the resultant of the forces in the given figures acts in the direction of y-axis , then F = ... force unit.



(a) 2

(b) 6

(c) 8

(d) 14

(20) The body is formed from rotation of a right-angled triangle a complete revolution about one of its right sides is ....

(a) cube (b) pyramid (c) cone (d) prism

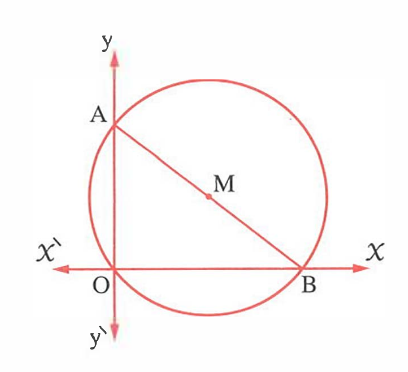
Second Essay questions

Answer the following questions :

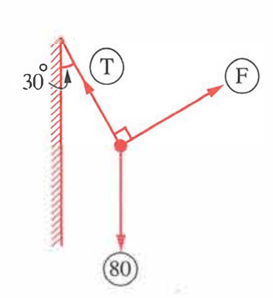
1 In the opposite figure :

OA = 6 unit length , OB = 8 unit length

Find the equation of the circle passes through Δ AOB



2 A body of weight 80 gm.wt. is suspended at one end of a string. the other end of the string is fixed at a point on a vertical wall with an angle of measure 30°. A force of magnitude F acts perpendicular to the string to become in equilibrium.
Find the magnitude of the force and the tension in the string.



2 Cairo Governorate



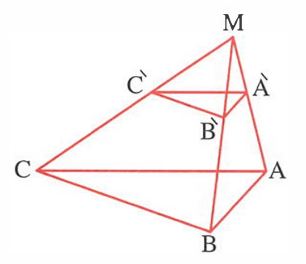
Helwan Zone
Mathematics Supervision

First Multiple choice questions



Choose the correct answer from those given :

(1) The given figure MABC is a triangular pyramid :
the plane ABC // the plane $\grave{A}\ \grave{B}\ \grave{C}$
, then the following are true except



(a) $\overleftrightarrow{AC}$ and $\overleftrightarrow{MB}$ are skew lines
(b) $\overleftrightarrow{\grave{A}\grave{B}}$ and $\overleftrightarrow{BC}$ are parallel lines
(c) $\overleftrightarrow{A\grave{A}}$ and $\overleftrightarrow{B\grave{B}}$ are intersecting lines
(d) $\overleftrightarrow{\grave{A}M} \subset$ the plane $AB\grave{B}$

(2) If the base side length of a regular quadrilateral pyramid is 18 cm. and its lateral area is 540 cm^2 , then its volme is .... cm^3

(a) 1296 (b) 1620 (c) 2160 (d) 2700

(3) If the total area of a regular faces pyramid is $144\sqrt{3}$ cm^2 , then its height is equal .... cm.

(a) $4\sqrt{6}$ (b) $8\sqrt{6}$ (c) $6\sqrt{3}$ (d) $12\sqrt{3}$

(4) If the point (3 , d) is the centre of the circle $x^2 + y^2 - e\,x + 10\,y = k$ and its diameter length is 12 cm. , then $7\,k + e + d =$ ....

(a) -15 (b) -13 (c) 13 (d) 15

(5) The equation of the circle passing through the vertices of triangle ABC , where A (4 , 2) , B (0 , – 6) and C is the origin point is ....

(a) $(x-2)^2 + (y+2)^2 = 20$ (b) $x^2 + (y+3)^2 = 9$
(c) $(x-2)^2 + (y-1)^2 = 5$ (d) $(x-4)^2 + (y+3)^2 = 25$

(6) If the total area of right circular cone is $756\,\pi$ cm^2 and the length of its drawer is 24 cm. , then the length of its base radius is aqual to .... cm.

(a) 42 (b) 24 (c) 18 (d) 12

(7) The given figure represents a net of a cone , then the volume of this cone = ... π cm^3

(a) $9\sqrt{3}$ (b) 18 (c) $36\sqrt{3}$ (d) 72

(8) If the resultant of two forces of magnitudes 4 and $4\sqrt{3}$ newton acting at a point is 4 newton , then the measure of the angle between them is ....°

(a) 30 (b) 60 (c) 120 (d) 150

(9) If the angle between two equal forces is $\frac{\pi}{3}$ and the magnitude of their resultant is $12\sqrt{3}$ newton , then the magnitude of each force is .... newton

(a) $12\sqrt{3}$ (b) 12 (c) $6\sqrt{3}$ (d) 6

(10) Two perpendicular forces of magnitudes 12 and 4 F newton act at a point. If their resultant is 3 F + 8 where $F \in \mathbb{Z}^+$ newton and the angle between the resultant and the force of magnitude 12 newton is $\theta°$, then $\cos\theta$ = ...

(a) $\frac{3}{5}$ (b) $\frac{4}{5}$ (c) $\frac{5}{13}$ (d) $\frac{12}{13}$

(11) If the minimum value of the resultant of two forces of magnitudes 7F and 3F newton is 20 newton , then the value of the maximum value of the resultant = ... newton

(a) 40 (b) 50 (c) 60 (d) 70

(12) If $\overrightarrow{F_1} = 8\,\vec{i} + b\,\vec{j}$, $\overrightarrow{F_2} = -6\,\vec{i} + 3\,\vec{j}$ and $\overrightarrow{F_3} = b\,\vec{i} - a\,\vec{j}$ are three equilibrium forces intersect at a point , then a + 2 b = ...

(a) 9 (b) 1 (c) – 3 (d) – 5

(13) Two forces $\overrightarrow{F_1} = 2\,\vec{i} + 7\,\vec{j}$ and $\overrightarrow{F_2} = \left(6\sqrt{2} , \frac{3\pi}{4}\right)$ and their resultant is $\vec{R} = k\,\vec{i} - m\,\vec{j}$, then 3k + m = ...

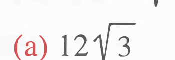
(a) 23 (b) 11 (c) – 13 (d) – 25

(14) If $\vec{R}$ is the resultant of the two forces $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$ and $\vec{R}$ is perpendicular to the force $\overrightarrow{F_1}$, then $F_1^2 + F_2^2 + R^2$ = ...

(a) $2F_1^2$ (b) $2F_2^2$ (c) $2R^2$ (d) zero

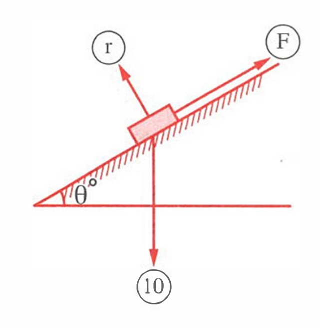
(15) In the given figure :

Two forces of magnitudes 6 and F and the magnitude of their resultant R , if the resultant inclined to the line of action of the force of magnitude 6 with an angle of measure 30° , then $F + \sqrt{3}\,R$ = ...



(a) $12\sqrt{3}$ (b) $6\sqrt{3}$ (c) 12 (d) 6

(16) In the figure a body is placed on a smooth plane inclined to the horizontal at an angle of measure θ where $\tan\theta = \frac{3}{4}$. It is pulled by a force of magnitude F in direction in the line of greatest slope upward. If r is the normal reaction , then $F + 2r = \dots\dots$



(a) 22 (b) 11

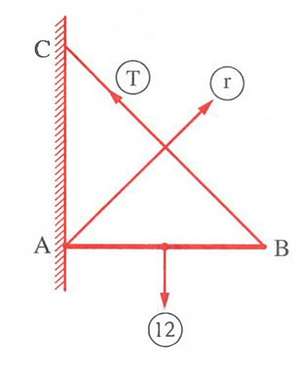
(c) 20 (d) 10

(17) Three forces of magnitudes 60. F and K newton act at a point are in equilibrium. If the measure of the angle between the first and second forces 120° and between the second and third forces is 90° , then $(F , K) = \dots\dots$

(a) $(30 , 30\sqrt{3})$ (b) $(15 , 15\sqrt{3})$ (c) $(15\sqrt{3} , 15)$ (d) $(30\sqrt{3} , 30)$

(18) In the opposite figure :

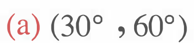
$\overline{AB}$ is a uniform rod of length 60 cm. and weight 12 kg.wt acting at its midpoint the end A is attached to a vertical wall by means of a hinge. The other end B is attached by a light string to the wall at a point C on the wall above A. If the string inclined to the horizontal plane at an angle of measure 45° , then $T + r = \dots\dots$ kg.wt.



(a) 12 (b) $12\sqrt{2}$

(c) $6 + 6\sqrt{2}$ (d) $12 + 12\sqrt{2}$

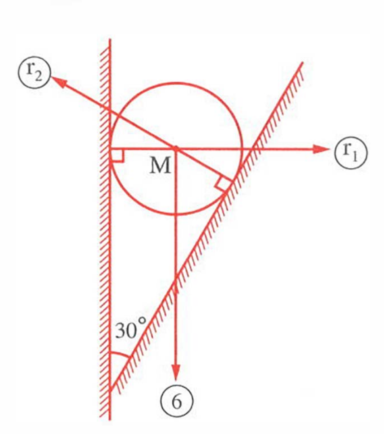
(19) A body of weight 50 kg.wt. is equilibrium by means of two light strength. If the tension in the first is 25 kg.wt. and inclined to the horizon at an angle of measure θ_1 and if the tension in the second is $25\sqrt{3}$ kg.wt and inclined to the horizon at an angle of measure θ_2 , then $(\theta_1 , \theta_2) = \dots\dots$



(a) (30° , 60°) (b) (60° , 30°) (c) (45° , 45°) (d) (45° , 60°)

(20) The given figure represents a sphere is placed between a smooth vertical wall and another one inclined to a vertical wall at an angle of measure 30° , then $\sqrt{3}\, r_1 + r_2 = \dots\dots$





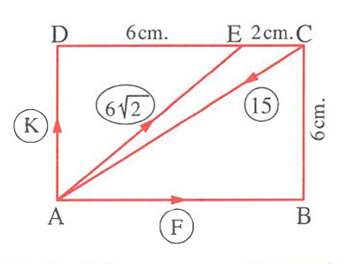
(a) $18\sqrt{3}$ (b) $12\sqrt{3}$

(c) 30 (d) 24

Second Essay questions

Answer the following questions :

1 **In the opposite figure :**



ABCD is a rectangle. Forces of magnitudes $6\sqrt{2}$, 15 , F and K act at $\overrightarrow{AE}$, $\overrightarrow{CA}$, $\overrightarrow{AB}$ and $\overrightarrow{AD}$ respectively.

If the forces are in equilibrium , then find the values of F and K

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2 If the length of the height of a regular triangular pyramid is 24 cm. and the length of its base height is 30 cm. find

(a) The lateral area of the pyramid. **(b)** The volume of the pyramid.

3 Cairo Governorate



Ain Shams Zon

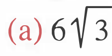
First Multiple choice questions



Choose the correct answer from those given :

(1) In the opposite figure :

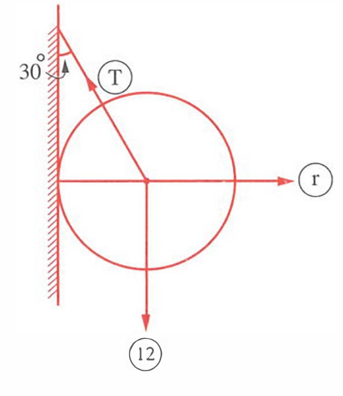
A body of weight 18 newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° , it is kept in equilibrium by a horizontal force of magnitude F newton , then F + r = ……………



(a) $6\sqrt{3}$ (b) $12\sqrt{3}$

(c) $18\sqrt{3}$ (d) $24\sqrt{3}$

(2) In the opposite figure :



If the sphere is in equilibrium , then T – r = …………… newton where r is the magnitude of the wall reaction on the sphere.

(a) $8\sqrt{3}$

(b) $4\sqrt{3}$

(c) 4

(d) 8

(3) Two forces of magnitudes 3 , 4 newton their resultant is 7 newton , then the measure of the angle between them is ……………

(a) zero° (b) 60° (c) 180° (d) 90°

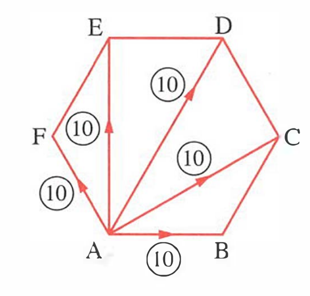
(4) Two forces of magnitudes 8 , F newton and the angle between them is 120° , and their resultant $F\sqrt{3}$ newton , then F = ... newton.

(a) 4 (b) $4\sqrt{2}$ (c) $4\sqrt{3}$ (d) 8

(5) Two forces of magnitudes 4 , 6 newton , the measure of the angle between them is 90° , then the tangent of the angle between the resultant and first force equals ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $2\sqrt{3}$ (d) $\frac{\sqrt{6}}{2}$

(6) Five forces equal in magnitude each equals 10 newton act on one of vertices of a regular hexagon in directions of the other vertices as shown in the opposite figure , then the resultant of this forces is .... newton.



(a) 50 (b) 20

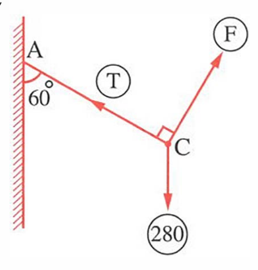
(c) $30\sqrt{3}$ (d) $20 + 10\sqrt{3}$

(7) Two forces are equal in magnitude and the magnitude of their resultant is 24 newton and the measure of the angle between the resultant and one of the two forces is 30° , then the magnitude of each force = ... newton

(a) 8 (b) $8\sqrt{3}$ (c) $8\sqrt{2}$ (d) 12

(8) **In the opposite figure :**

A lamp of weight 280 gm.wt is attached to the end of a string , it is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T}$ = ...



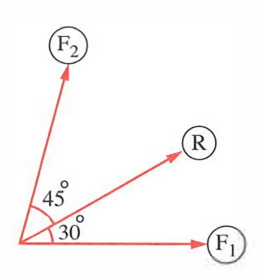
(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

(9) If $\overrightarrow{R}$ is the resultant of the two forces $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, where $F_2 > F_1$, then which of the following conditions is enough to make $\overrightarrow{R} \perp \overrightarrow{F_1}$?

(a) $R^2 = F_2^2 - F_1^2$ (b) $R^2 = F_2^2 + F_1^2$ (c) $\overrightarrow{F_1} \perp \overrightarrow{F_2}$ (d) All of previous

(10) **In the opposite figure :**

The force $\overrightarrow{R}$ is the resultant of the two forces $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, then F_2 = ...



(a) $\frac{R \sin 45}{\sin 75}$ (b) R sin 30°

(c) $\frac{R \sin 30}{\sin 75}$ (d) R sin 45°

(11) Three coplanar forces of magnitudes 60 , F and K newton meeting at a point and in equilibrium. If the angle between the 1^{st} and the 2^{nd} forces is of measure 120° and between the 2^{nd} and the 3^{rd} is of measure 90° , then the value of K = ... newton.

(a) $30\sqrt{3}$ (b) $30\sqrt{2}$ (c) 30 (d) 60

(12) The maximum value of the resultant of two forces is 25 newton and minimum value of their resultant is 13 newton , then their magnitudes are ....

(a) 25 , 13 (b) 13 , 12 (c) 19 , 6 (d) 7 , 20

(13) Two non parallel planes intersect at ....

(a) A point (b) a straight line (c) a plane (d) a ray

(14) Right circular cone , area of its base = 25 π cm^2 , length of its drawer = 13 cm. , then its lateral area = ... cm^2

(a) 50 π (b) 65 π (c) 90 π (d) 100 π

(15) The point which lies on the circle $(x-2)^2 + y^2 = 13$ is ....

(a) (2 , 3) (b) (2 , – 3) (c) (2 , 5) (d) (4 , 3)

(16) A regular quadrilateral pyramid. the perimeter of its base = 40 cm. and its height 12 cm. , then its lateral surface area = ... cm^2

(a) 200 (b) 240 (c) 260 (d) 320

(17) Number of the planes which passes through two given points is ....

(a) zero (b) 1 (c) 2 (d) infinite

(18) A right cirular cone , length of its drawer 17 cm. , and its height 15 cm. , the radius length of its base = ... cm.

(a) 8 (b) 13 (c) 7 (d) 12

(19) The circumference of the circle which its equation is $x^2 + y^2 = 8$ is ....

(a) 8 π (b) 64 π (c) $2\sqrt{2}$ π (d) $4\sqrt{2}$ π

(20) The volume of the regular quadrilateral pyramid , where the perimeter of its base = 36 cm. and its height 10 cm. is .... cm^3

(a) 180 (b) 270 (c) 360 (d) 810

Second Essay questions

Answer the following questions :

1 $\overline{AB}$ is a uniform rod , its end A is attached by a hinge fixed in vertical wall A horizontal force acts at the end B to keep rod in equilibrium while it inclined to the wall by an angle of measure 45° , if the weight of the rod is 4 kg.wt acts at its midpoint , then find the magnitude of the force and the reaction of the hinge.

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2 A regular quadrilateral pyramid. the side length of its base is 18 cm. and its volume is 1296 cm^3 , find its slant height and its lateral surface area.

4 Giza Governorate  Maths Inspection



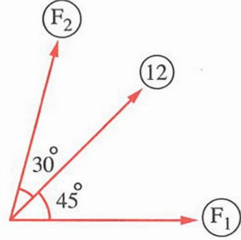
First Multiple choice questions

Choose the correct answer from those given :

(1) Two forces act at a point. The magnitude of the two forces are 6 , 3 newton and their resultant is perpendicular to one of them , then the magnitude of their resultant = ... newton.

(a) 3 (b) $3\sqrt{3}$ (c) 6 (d) $6\sqrt{3}$

(2) In the opposite figure :



If the force of magnitude 12 N. is resolved into two components $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$, then F_1 = ... newton.

(a) 12 cos 75° (b) 12 cos 45°
(c) 6 csc 45° (d) 6 csc 75°

(3) If $\overrightarrow{F_1} = \overrightarrow{i} - \overrightarrow{j}$, $\overrightarrow{F_2} = 2\overrightarrow{i} - 4\overrightarrow{j}$ and their resultant $\overrightarrow{R} = 2a\overrightarrow{i} - 3b\overrightarrow{j}$, then a + b = ...

(a) 3 (b) $3\frac{1}{3}$ (c) $3\frac{1}{6}$ (d) 12

(4) If the two straight lines L_1 and L_2 are skew , then $L_1 \cap L_2$ = ...

(a) ∅ (b) L_1
(c) L_2 (d) the plane contains L_1 and L_2

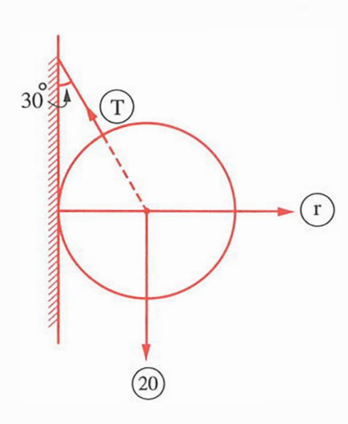
(5) Three equal forces in magnitude meeting at a point and they are in equilibrium , then the measure of the angle between each two forces = ...

(a) 60° (b) 90° (c) 120° (d) 150°

(6) Number of planes that are passing through two different parallel straight lines = ...

(a) 1 (b) 2 (c) 3 (d) an infinite number.

(7) In the opposite figure :



A smooth sphere of weight 20 newton rests against a smooth vertical wall. It suspended at a point on its surface by means of a string and the other end is fixed to the wall at a point lies directly above the point of tangency of the sphere and the wall , if the string makes with the vertical an angle of measure 30° , then in case of equilibrium T : r = ...

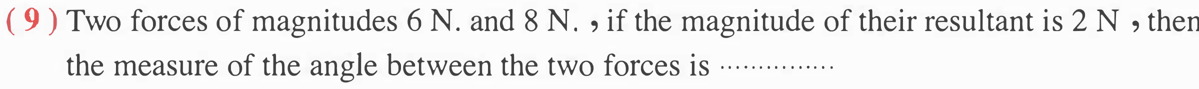
(a) 2 : 1 (b) 1 : 2
(c) $\sqrt{3} : 1$ (d) $2 : \sqrt{3}$



(8) A regular quadrilateral pyramid , the area of its base = 100 cm^2 and its height is 12 cm. , then its lateral area equal .... cm^2

(a) 260 (b) 520 (c) 130 (d) 360

(9) Two forces of magnitudes 6 N. and 8 N. , if the magnitude of their resultant is 2 N , then the measure of the angle between the two forces is ....



(a) 30° (b) 90° (c) 180° (d) 270°

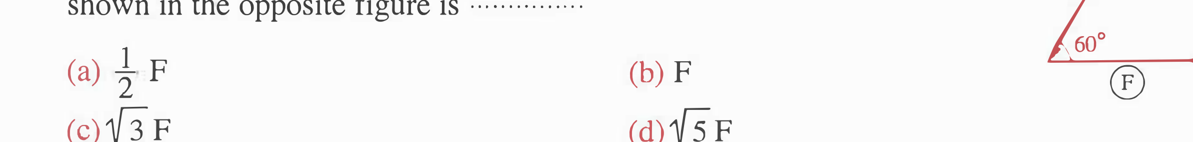
(10) The centre of the circle in which its diameter is $\overline{AB}$ where A = (– 1 , 3) , B = (5 , – 3) is ....

(a) (4 , 0) (b) (2 , 0) (c) (– 6 , – 6) (d) (0 , 4)

(11) The centre of the circle whose equation $2x^2 + 2y^2 + 12x - 16y = 0$ is ....

(a) (3 , – 4) (b) (– 6 , 8) (c) (– 3 , 4) (d) (6 , – 8)

(12) The magnitude of the resultant of the two forces shown in the opposite figure is ....



(a) $\frac{1}{2}$ F (b) F

(c) $\sqrt{3}$ F (d) $\sqrt{5}$ F

(13) If $\overrightarrow{F_1} = 4\,\overrightarrow{i}$, $\overrightarrow{F_2} = 8\,\overrightarrow{i} - 5\,\overrightarrow{j}$, then $\| \overrightarrow{R} \|$ = ... force unit.

(a) 12 (b) 5 (c) 13 (d) $\sqrt{73}$

(14) If $\overrightarrow{F}$ is in equilibrium with two perpendicular forces of magnitudes 8 newton and 15 newton , then F = ... newton.

(a) 7 (b) 17 (c) 23 (d) $7\sqrt{2}$

(15) A force of magnitude $10\sqrt{2}$ gm.wt. acts in the Eastern South direction , is resolved into two perpendicular components , then the magnitude of the component in the South direction = ... gm.wt.

(a) 5 (b) 10 (c) $10\sqrt{2}$ (d) $5\sqrt{2}$

(16) Three coplanar forces : $\overrightarrow{F_1} = 6\,\overrightarrow{i} + 7\,\overrightarrow{j}$, $\overrightarrow{F_2} = a\,\overrightarrow{i} - 9\,\overrightarrow{j}$, $\overrightarrow{F_3} = 5\,\overrightarrow{i} + b\,\overrightarrow{j}$ act at a particle and they are in equilibrium , then a + 2 b = ...

(a) – 9 (b) 5 (c) 7 (d) – 7

(17) A regular quadrilateral pyramid whose lateral area = 30 cm^2 , and its slant height = 5 cm. , then its base perimeter = ... cm.

(a) 6 (b) 12 (c) 24 (d) 36

(18) In a right circular cone , the radius length of its base = 15 cm. and its height = 20 cm. , then its lateral area = ... cm^2

(a) 375 π (b) 600 π (c) 1500 π (d) 1875 π

(19) The diameter length of the circle : $4x^2 + 4y^2 + 16x - 8y - 16 = 0$ equals .... length unit.

(a) 3 (b) 6 (c) 12 (d) 24

(20) The force which is in equilibrium with two perpendicular forces F , F newton makes with one of the two forces an angle of measure ....°

(a) 90 (b) 120 (c) 135 (d) 150

Second Essay questions

Answer the following questions :

1 A regular quadrilateral pyramid whose base area is 700 cm^2 and its slant height is 20 cm. Find its volume.

---

2 A smooth sphere of radius length 30 cm. and of weight 200 gm.wt. rests on a vertical smooth wall. It is suspended by a string of length 20 cm. , one of its ends is attached to a point on the surface of the sphere and the other end is fixed at a point on the wall above the touch point of the sphere and the wall.

Find the magnitudes of the tension in the string and the reaction of the wall in case of equilibrium.

5 Giza Governorate



Awseem Directorate
Mathematics Inspection

First Multiple choice questions



Interactive test ⑤

Choose the correct answer from those given :

(1) Two forces are equal and the magnitude of their resultant is 8 newton when the measure of the angle between them is 90° then the greatest value of their resultant = ... newton.

(a) 16 (b) $8\sqrt{2}$ (c) $4\sqrt{2}$ (d) $16\sqrt{2}$

(2) A right quadrilateral pyramid its total surface area = 70 cm^2 and its lateral surface area = 45 cm^2 , then its height = ... cm.

(a) 2.5 (b) 5 (c) 4.5 (d) $\sqrt{14}$

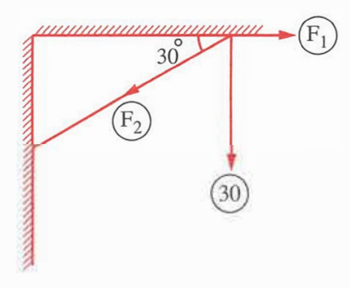
(3) Two forces of magnitude 7 F and 8 F and their resultant is F , then the measure of the angle between them = ...°

(a) zero (b) 90 (c) 180 (d) 270

(4) A force of magnitude 60 newton is resolved into two equal forces F , F and the measure of the angle between their lines of action is 60° , then F = ...

(a) $20\sqrt{3}$ (b) $5\sqrt{3}$ (c) $10\sqrt{3}$ (d) 30

(5) In the opposite figure :



A force of magnitude 30 newton is resolved into two components , one of them is horizontal of magnitude F_1 and the other is of magnitude F_2 , then F_1 = ... newton.

(a) 30 (b) 60

(c) $60\sqrt{3}$ (d) $30\sqrt{3}$

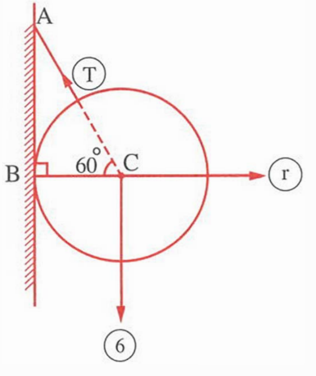
(6) Two forces of magnitudes 6 , F newton act at a point and the measure of the angle between them is 120° , then the magnitude of F which makes the resultant as great as possible is ....

(a) 1 (b) 2 (c) 3 (d) 4

(7) The center of the circle whose equation is : $3x^2 + 3y^2 - 24x + 36y = 0$ is ....

(a) (4 , – 6) (b) (12 , – 18) (c) (8 , – 12) (d) (– 4 , 6)

(8) In the opposite figure :



If the sphere is in equilibrium , then T – r = ... newton.

(a) $6\sqrt{3}$

(b) $4\sqrt{3}$

(c) $2\sqrt{3}$

(d) 2

(9) Two perpendicular forces of magnitudes 2.5 newton and 6 newton act at a point , then their resultant inclines to the first force by an angle of measure ....

(a) 67° 23′ (b) 157° 23′ (c) 337° 23′ (d) 22° 37′

(10) If the x-axis touches the circle : $x^2 + y^2 + mx + 4y + 7 - 3m = 0$, then m = ...

(a) 2 or 14 (b) – 2 or – 14 (c) 2 or – 14 (d) – 2 or 14

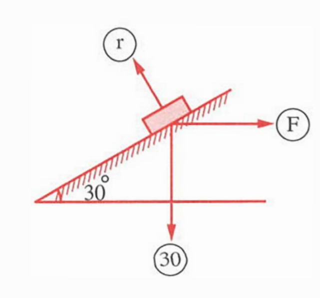
(11) If the forces $\overrightarrow{F_1} = 5\hat{i} - 4\hat{j}$, $\overrightarrow{F_2} = -6\hat{i} + a\hat{j}$, $\overrightarrow{F_3} = b\hat{i} + 7\hat{j}$ are meeting at a point and are in equilibrium , then a + b = ...

(a) – 2 (b) 2 (c) – 3 (d) 1

(12) The number of planes that pass through three colinear points is ....

(a) 1 (b) 2 (c) 3 (d) infinite number.

(13) In the opposite figure :



F + r = ... Newton.

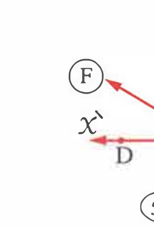
(a) $20\sqrt{3}$ (b) $10\sqrt{3}$

(c) $30\sqrt{3}$ (d) 30

(14) A triangular pyramid of regular faces of height 6 cm. , then its volume = ... cm^3.

(a) $18\sqrt{2}$ (b) $9\sqrt{3}$ (c) $18\sqrt{3}$ (d) $27\sqrt{3}$

(15) If the resultant of the forces in the opposite figure acts in the y-axis , then F = ... kg.wt.



(a) 5

(b) 7

(c) 3

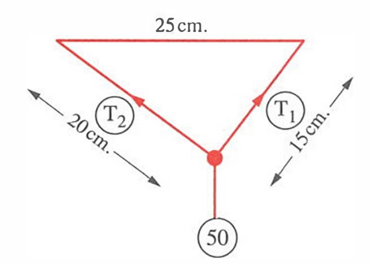
(d) $\sqrt{3}$

(16) If $\overleftrightarrow{XY} \subset$ plane M , $\overleftrightarrow{LZ}$ // plane M , then $\overleftrightarrow{XY}$ and $\overleftrightarrow{LZ}$ are ....

(a) only parallel. (b) only skew. (c) parallel or skew. (d) intersecting.

(17) In the opposite figure :

A body of weight 50 gm.wt. Is suspended by two strings of lengths 15 cm. and 20 cm. and the other two ends of the string are fixed on two points of a horizontal line the distance between them is 25 cm. , then $T_1 + T_2$ = ... gm.wt.



(a) 30 (b) 40 (c) 70 (d) 10

(18) A right circular cone if its base radius length is decreased to be half of its length and its height is increased to be double its length , then its volume will be ....

(a) as it is (b) four times (c) its half (d) doubled

(19) ABCD is a rectangle in which AB = 4 cm. , BC = 3 cm. , forces of magnitude 2 , 5 , 3 act in the directions of $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ respectively , then the resultant of these forces = ...

(a) $4\sqrt{2}$ (b) $6\sqrt{2}$ (c) $8\sqrt{2}$ (d) $10\sqrt{2}$

(20) A body of weight (W) newton is placed on a plane inclined to the horizontal at an angle of measure (θ) if the components of the weight in the direction of the line of the greatest slope and the perpendicular to it are 7 and 24 newton respectively , then the magnitude of the weight (W) = ...

(a) 7 (b) 24 (c) 25 (d) 31

Second | Essay questions

Answer the following questions :

1 A uniform rod of length 65 cm. and weight 26 newton is suspended at its ends by two strings tied at a point. If the length of one of them is 25 cm. and the length of the other is 60 cm. What is the tension in each of the two strings ?

---

2 Find the equation of the circle whose center is (1 , 2) and touches the straight line : $3x + 4y + 9 = 0$

6 Alexandria Governorate — Al Agamy zone Mathematics Inspection

First | Multiple choice questions



Choose the correct answer from those given :

(1) Two forces of magnitudes 4 and 6 newton. The measure of the angle between them is 90° , then the tangent of the angle between the resultant and the first force equal ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $2\sqrt{13}$ (d) $\frac{\sqrt{6}}{2}$

(2) The number of planes passes through 3 collinear points is ....

(a) zero (b) 1 (c) 3 (d) infinite

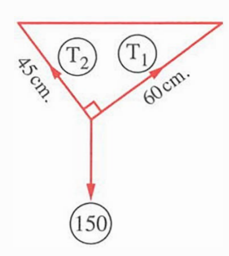
(3) Two forces F_1 , F_2 in which $3 \le F_1 \le 12$, $4 \le F_2 \le 16$ and $F_1 \perp F_2$, then R is given by ....

(a) $5 \le R \le 20$ (b) $7 \le R \le 28$ (c) $0 \le R \le 18$ (d) $1 \le R \le 4$

(4) $\vec{F_1} = 3\vec{i} - 2\vec{j}$, $\vec{F_2} = a\vec{i} - \vec{j}$, $\vec{R} = 5\vec{i} - b\vec{j}$, then $a - b =$ ....

(a) – 1 (b) 1 (c) 3 (d) 5

(5) In the opposite figure :



A body of weight 150 gm.wt. is in equilibrium by suspending it by two perpendicular strings as shown



, then $T_2 - T_1 =$ .... gm.wt.

(a) 120 (b) 90

(c) 60 (d) 30

(6) The volume of a regular quadrilateral pyramid whose base perimeter 36 cm. and height 10 cm. equals .... cm^3



(a) 810 (b) 270 (c) 180 (d) 120

(7) The resultant of the two forces F and 2 F is perpendicular to the first force , then measure of the included angle between the two forces equals ....°

(a) 30 (b) 60 (c) 90 (d) 120

(8) A ball of pendulum of weight 600 dyne is in equilibrium when the string makes an angle of measure 30° with the vertical under the effect of a force perpendicular to the string , then the magnitude of the force = ... dyne

(a) 1200 (b) 300 (c) $300\sqrt{2}$ (d) $300\sqrt{3}$

(9) A body of weight W is placed on an inclined plane inclined to the horizontal by angle θ if the components of the weight in the directions of the plane and perpendicular to it are 7 , 24 N , then W = ...

(a) 7 (b) 24 (c) 25 (d) 31

(10) A triangular regular faces pyramid its edge length is 4 cm. , then its total area = ... cm^2

(a) $4\sqrt{3}$ (b) $16\sqrt{3}$ (c) 4 (d) 16

(11) Two forces equal in magnitude , the measure of the included angle is $\frac{\pi}{2}$, the magnitude of their resultant is 8 N , then the value of each force equals ....

(a) 2 (b) $2\sqrt{2}$ (c) 4 (d) $4\sqrt{2}$

(12) The ratio between the maximum and minimum value of the resultant of two forces is 7 : 3 , then the ratio between the two forces is ....

(a) 7 : 4 (b) 7 : 3 (c) 5 : 3 (d) 5 : 2

(13) The radius length of the circle of equation :
$(n + 3) x^2 + y^2 + (m - n) x - 4 y + (m - 2) x y - 8 = 0$ is .... unit length.

(a) 2 (b) 4 (c) 6 (d) 8

(14) Two forces of magnitudes 8 and F Newton act at a point , the measure of the angle between them is 135° , if the resultant inclined with an angle of measure 45° to the force F , then F = ... newton

(a) $8\sqrt{2}$ (b) 8 (c) $18\sqrt{2}$ (d) $16\sqrt{2}$

(15) The magnitude of the resultant of the two forces shown in the opposite figure is .... N

5N
120°
3N

(a) 19 (b) 7
(c) $\sqrt{19}$ (d) $\sqrt{7}$

(16) The central angle of the sector if folded It becomes the opposite cone is ....

13 cm.
12 cm.

(a) acute (b) right
(c) obtuse (d) reflex

(17) In the opposite figure :

a body of weight 18 N is placed on a smooth plane inclined to the horizontal by an angle of measure 30° it is kept in equilibrium by a horizontal force as shown , then F + r = ... N



(a) $6\sqrt{3}$ (b) $12\sqrt{3}$ (c) $18\sqrt{3}$ (d) $24\sqrt{3}$

(18) The lateral area of a right cone whose base radius length 6 cm. and its height 8 cm. equals .... cm^2

(a) 60π (b) 28π (c) 40π (d) 48π

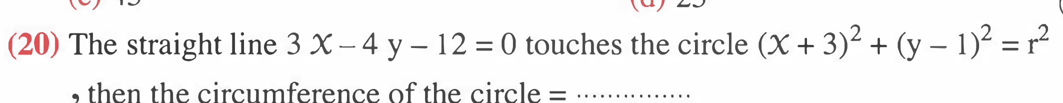
(19) In the opposite figure :

The body is in equilibrium under acting of the shown forces , then m (∠ θ) = ...°

(a) 60 (b) 30

(c) 45 (d) 25

(20) The straight line $3x - 4y - 12 = 0$ touches the circle $(x + 3)^2 + (y - 1)^2 = r^2$



, then the circumference of the circle = ...

(a) 5π (b) 10π (c) 15π (d) 20π

Second Essay questions

Answer the following questions :

1 A metal sphere of weight 300 kg.wt. acts in its center placed between two smooth planes one of them is vertical and the other inclined 60° with the vertical find the reaction of the two planes in case of equilibrium.

---

2 A cube of wax of edge length 10 cm. it was melted and transformed into a regular quadrilateral pyramid of base length 10 cm. Find the height of the pyramid given that 10 % of the wax was lost during melting.

7 Alexandria Governorate



Borg Al-Arab Zone Mathematics Inspection

First Multiple choice questions



Interactive test 7

Choose the correct answer from those given :

(1) Two forces of magnitudes 3 , 5 newton act at a point at a particle , if the magnitude of their resultant is 7 newton , then measure of the angle between them = ...°

(a) 75 (b) 60 (c) 45 (d) 30

(2) Two perpendicular forces and equal in magnitude , the magnitude of their resultant = 8 newton , then the magnitude of each of them = ... newton

(a) 4 (b) 8 (c) $4\sqrt{2}$ (d) $2\sqrt{2}$

(3) Two forces of magnitudes 17 , F newton act at a point at a particle , the measure of the included angle between them = 120° and their resultant is perpendicular to the first force so the value of F = ... newton.

(a) 13 (b) 15 (c) 24 (d) 34

(4) A body of weight W newton is placed on a plane inclined to the horizontal at an angle of measure 30° if the component of the weight in the direction of the line of greatest slope = 25 newton , then the magnitude of W = ... newton

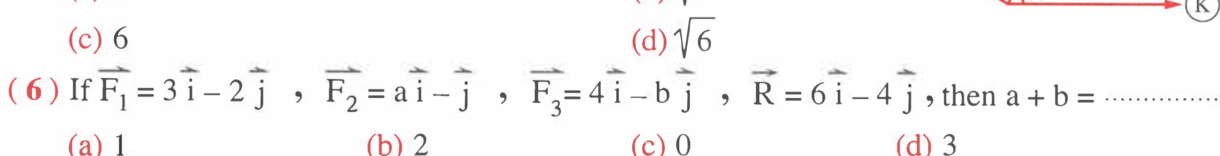
(a) 50 (b) $50\sqrt{2}$ (c) $25\sqrt{2}$ (d) 35

(5) In the opposite figure :

If the force (F) is resolved into two components , then K ÷ F = ...

(a) 2 (b) $\sqrt{2}$

(c) 6 (d) $\sqrt{6}$



(6) If $\overrightarrow{F_1} = 3\,\overrightarrow{i} - 2\,\overrightarrow{j}$, $\overrightarrow{F_2} = a\,\overrightarrow{i} - \overrightarrow{j}$, $\overrightarrow{F_3} = 4\,\overrightarrow{i} - b\,\overrightarrow{j}$, $\overrightarrow{R} = 6\,\overrightarrow{i} - 4\,\overrightarrow{j}$, then a + b = ...

(a) 1 (b) 2 (c) 0 (d) 3

(7) In the opposite figure :

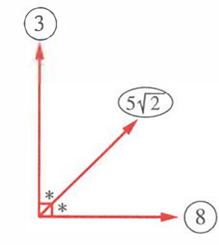
The resultant ≈ .... newton.

(a) 12

(b) 13

(c) 15

(d) 16



(8) A body of weight 14 newton is placed on a smooth plane inclined to the horizontal at angle of measure θ and kept in equilibrium by force of magnitude 7 newton in the direction of the line of greatest slope of the plane upward , then θ = ...°

(a) 45 (b) 30 (c) 60 (d) 55

(9) A weight of magnitude W is suspended at the end of a string and the other end is fixed at a point of a vertical wall a force F acts on the weight in a perpendicular direction of the string till it become in equilibrium when the string inclined to the wall with an angle of measure 30° if the tension of the string = $30\sqrt{3}$ newton , then W + F = ... newton.

(a) 30 (b) 60 (c) 90 (d) 45

(10) A homogeneous sphere rests on two parallel rods lie on the same horizontal plane the distance between them $15\sqrt{2}$ cm. and the radius length of the sphere = 15 cm. and its weight = $12\sqrt{2}$ newton , then the sum of the two reaction on the two rods = ...

(a) 12 (b) 36 (c) 15 (d) 24

(11) The least number of coplanar unequal in magnitude forces could be in equilibrium is ....

(a) 3 (b) 4 (c) 1 (d) 2

(12) A uniform rod which is movable around one of its ends is pulled a side by horizontal force acting on the other end and equal half the weight of the rod , then the measure of the angle of inclination of the rod to the vertical = ...°

(a) 30 (b) 45 (c) 57 (d) 60

(13) A triangular regular faces pyramid whose edge length is 6 cm. , then its height = ... cm.

(a) $6\sqrt{2}$ (b) $3\sqrt{2}$ (c) $2\sqrt{6}$ (d) 6

(14) A right quadrilateral pyramid whose base is rhombus of two diagonal lengths 12 and 8 cm. , if the height of the pyramid = 10 cm. , then the volume of the pyramid = ... cm^3.

(a) 200 (b) 160 (c) 80 (d) 40

(15) A regular triangular pyramid its base length 24 cm. and its height 4 cm. , then the length of its slant height = ... cm.

(a) 12 (b) 16 (c) 8 (d) 7

(16) A right circular cone its height 24 cm. and the length of its drawer 26 cm. , then its volume = ... cm^3.

(a) 500π (b) 800π (c) 700π (d) 600π

(17) Aright circular cone its total surface area = 24π cm^2. and the length of its drawer = 5 cm. then the radius length of its base = ... cm.

(a) 3 (b) 5 (c) 6 (d) 8

(18) A rigid body of weight 20 newton is placed on the inclined plane its length 10 m. and height 8 m. , then the components of weight in the perpendicular direction to the plane = ... newton.

(a) 5 (b) 12 (c) 8 (d) 16

(19) If $\overline{AB}$ is a diameter of the circle $(x-5)^2 + (y-5)^2 = 13$, A = (2 , k) , then one of the values of k = ...

(a) 4 (b) 6 (c) 7 (d) 9

(20) The equation of the circle its center is (3 , –4) and touches x-axes is ....

(a) $(x-3)^2 + (y-4)^2 = 13$ (b) $(x+3)^2 + (y-4)^2 = 16$

(c) $(x-4)^2 + (y-3)^2 = 13$ (d) $(x-3)^2 + (y+4)^2 = 16$

Second | Essay questions

Answer the following questions :

1 $\overline{AB}$ is a uniform rod , the end A is attached to a hinge fixed on the vertical wall and end B is tied by a light string passes over smooth pully C exactly above A and attached a weight half the weight of the rod find measure of the angle of inclination of the rod to the horizontal in state of equilibrium given that AC = AB

---

2 Find equation of the circle if its center is (2 , 2) and the straight line $3\,x = 4 - 4\,y$ is tangent to the circle.

8 El-Kalyoubia Governorate



Mathematics Inspection

First | Multiple choice questions

Interactive test ⑧

Choose the correct answer from those given :

(1) Two forces F_1 and F_2 in directions East and North respectively and their resultant is $5\sqrt{3}$ newton , inclined 30° to North , then $F_1 =$ .... newton.

(a) 5 (b) $7\frac{1}{2}$ (c) $\frac{5\sqrt{3}}{2}$ (d) 15

(2) If three coplanar forces $\overrightarrow{F_1} = 5\,\overrightarrow{i} + 3\,\overrightarrow{j}$, $\overrightarrow{F_2} = a\,\overrightarrow{i} + 6\,\overrightarrow{j}$, $\overrightarrow{F_3} = -14\,\overrightarrow{i} + b\,\overrightarrow{j}$ act at a point and their resultant $\overrightarrow{R} = (-10 , 10)$, then $a + b =$ ....

(a) – 1 (b) 1 (c) zero (d) 14

(3) Two forces of magnitudes (5 F + 50) , (7 F + 10) newton acting at a point and the maximum resultant is 180 newton , then F = ... newton

(a) 10 (b) 20 (c) 30 (d) 40

(4) In the opposite figure :

If the system are in equilibrium.

, then $T_1 + T_2 =$ ....

(a) 100 (b) 300

(c) 400 (d) 700

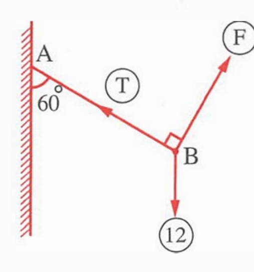
(5) Two forces of magnitudes $8\sqrt{3}$ and 8 newton act at a point the angle between them of measure 150° , then the magnitude of the resultant of the two forces = ... newton.

(a) 64 (b) 32 (c) 16 (d) 8

(6) In the opposite figure :

If the system are in equilibrium

, then $\frac{F}{T}$ = ...



(a) $\frac{1}{\sqrt{3}}$ (b) $\sqrt{3}$

(c) $18\sqrt{3}$ (d) $12\sqrt{3}$

(7) Two forces act at a point. The magnitude of the two forces are 10 , 7 newton , then the magnitude of their resultant measure by newton ∈ ....

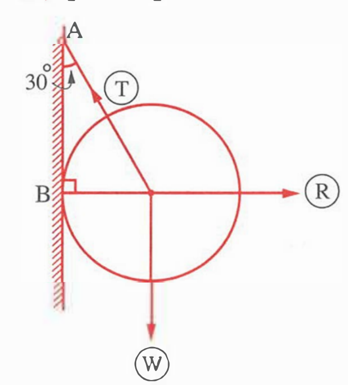
(a)]7 , 10[(b)]3 , 17[(c) [7 , 10] (d) [3 , 17]

(8) In the opposite figure :

m (∠ A) = 30°

If the sphere is in equilibrium

, then R : T : W = ...



(a) $1 : \sqrt{3} : 2$

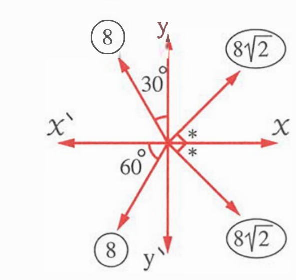
(b) $1 : 2 : \sqrt{3}$

(c) $\sqrt{3} : 1 : 2$

(d) $2 : \sqrt{3} : 1$

(9) In the opposite figure :

The resultant of the system of forces R = ... newton



(a) 8 (b) $8\sqrt{2}$

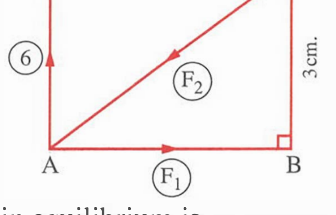
(c) 16 (d) $16\sqrt{2}$

(10) In the opposite figure :

ABCD is a rectangle.

If the system of forces are in equilibrium

, then $F_1 + F_2$ = ...



(a) 9 (b) 12

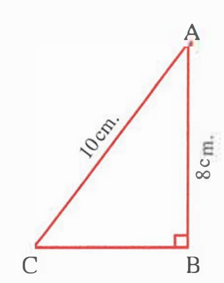
(c) 18 (d) 24

(11) The least number of coplanar unequal in magnitude forces could be in equilibrium is ....

(a) 1 (b) 2 (c) 3 (d) 4

(12) In the opposite figure :

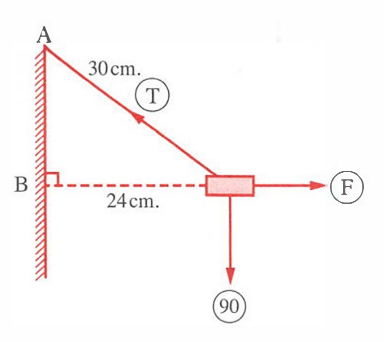
If the triangle ABC is rotated about $\overleftrightarrow{AB}$ with a full revolution , then the volume of the generated solid = ... cm^2.



(a) 48 π (b) 96 π

(c) 128 π (d) 288 π

(13) In the opposite figure :



If the system are in equilibrium , then $T - F =$ ....

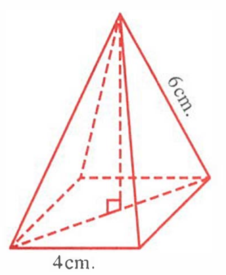
(a) 150

(b) 120

(c) 50

(d) 30

(14) In the opposite figure :



A regular quadrilateral pyramid , then its volume is .... cm^3.

(a) $32\sqrt{7}$ (b) $\frac{32\sqrt{7}}{3}$

(c) $\frac{64\sqrt{7}}{3}$ (d) $64\sqrt{7}$

(15) The two circles : $(x-2)^2 + (y+1)^2 = 4$, $(x-5)^2 + (y-3)^2 = 9$ are ....

(a) touching externally (b) touching internally

(c) concentric (d) distant

(16) Right circular cone the length of its base radius is 6 cm. and its height 8 cm. , then its lateral area = ... cm^2.

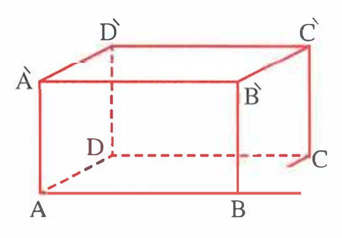
(a) 60π (b) 28π (c) 10π (d) 48π

(17) In a triangular pyramid of regular faces , if the sum of lengths of its edges is 18 cm. , then its total area = ... cm^2.

(a) $\frac{27\sqrt{2}}{4}$ (b) $\frac{27\sqrt{3}}{4}$ (c) $\frac{27\sqrt{3}}{2}$ (d) $9\sqrt{3}$



(18) In the opposite figure :



plane $AA'B'$ $\cap$ plane $A'CC'$ ....

(a) $\overleftrightarrow{AA'}$

(b) $\overleftrightarrow{BB'}$

(c) $\overleftrightarrow{CC'}$

(d) $\overleftrightarrow{A'C}$

(19) A regular quadrilateral pyramid , the perimeter of its base = 50 cm. and its slant height 10 cm. , then its lateral area = ... cm^2.

(a) 250 (b) $250\sqrt{3}$ (c) 500 (d) 1000

(20) Number of the straight lines which passes through two coincident planes is ....

(a) 0 (b) 1 (c) 2 (d) infinite

Second Essay questions

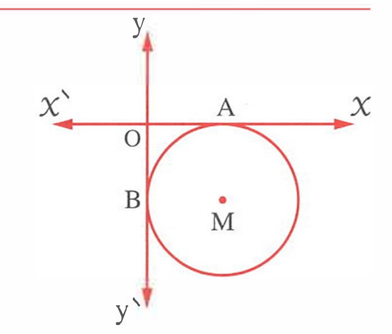
Answer the following questions :

1 Three coplanar forces of magnitudes 5 , 10 , $4\sqrt{7}$ newton act at a point , the measure of the angle between the first two forces equals 60° , find the greatest and the smallest magnitude of their resultant.

2 **In the opposite figure :**

the circle touches the two coordinate axes at A and B and the length of $\overline{MO} = 2\sqrt{2}$ length unit.

Find the general equation of the circle M



9 El-Monofia Governorate



Menouf Directorate
Mathematics Inspection

First Multiple choice questions



Interactive test (9)

Choose the correct answer from those given :

(1) The magnitudes of two forces acting at point are 3 , 9 newton and the magnitude of their resultant is R , then R ∈ ....

(a) [3 , 9]   (b)]3 , 9[(c) [6 , 12]   (d)]6 , 12[

(2) The magnitudes of two forces acting at point are 3 , 6 newton and the magnitude of their resultant is $3\sqrt{3}$ newton , then the measure of the angle between the forces is ....

(a) 30°   (b) 90°   (c) 120°   (d) 150°

(3) Two forces of magnitude 2 , 7 newton and their resultant is 5 newton , then the measure of the angle between their resultant and the first force is ....°

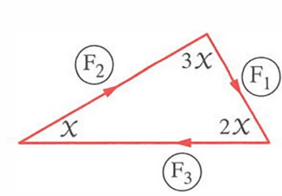
(a) π (b) zero   (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{3}$

(4) $\vec{F_1} = \vec{i} + k\,\vec{j}$, $\vec{F_2} = \vec{j} - \vec{i}$, and their resultant $\vec{R} = 2\,\vec{j}$, then k = ...

(a) 1   (b) 2   (c) 3   (d) 4

(5) **In the opposite figure :**

Forces is equilibrium , then $F_2 : F_3$ = ...

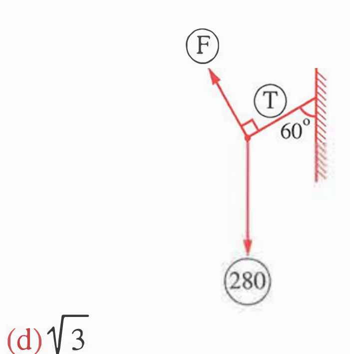


(a) $\sqrt{3} : 2$ (b) 1 : 2

(c) 2 : 3   (d) $1 : \sqrt{3}$



(6) In the opposite figure :

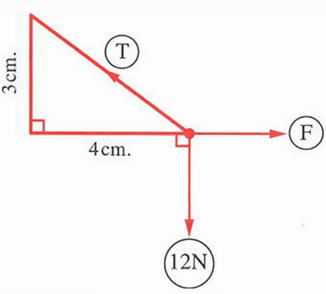


A lamp weight 280 gm.wt. is attach to the end of a string it is an equilibrium under effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60°

, then $\frac{F}{T} =$ ....

(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

(7) In the opposite figure :



The magnitudes of three coplanar forces 3 , 4 , F if the forces are equilibrium , then F = ...

(a) 3 (b) 4

(c) 7 (d) 5

(8) The resultant of the two forces 8 , F gm.wt bisect the angle between them , then F = ... gm.wt.

(a) 4 (b) 8 (c) 16 (d) 5

(9) In the opposite figure :

A body is equilibrium , then F = ...

(a) 24

(b) 12

(c) 16

(d) 6

(10) $\overrightarrow{F_1} = 2\overrightarrow{i} + 3\overrightarrow{j}$, $\overrightarrow{F_2} = 3\overrightarrow{i} - a\overrightarrow{j}$, $\overrightarrow{F_3} = b\overrightarrow{i} + 7\overrightarrow{j}$ they are equilibrium , then $a - b =$ ....

(a) 10 (b) 5 (c) 15 (d) 20

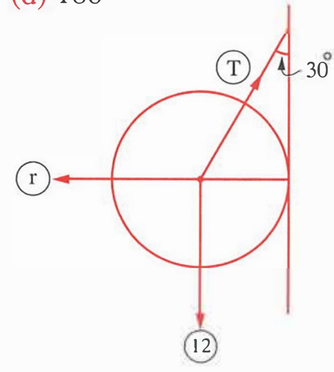
(11) The magnitudes of two forces acting at point are 8 , 6 newton , then the value of the resultant may be equals ....

(a) 15 (b) $\sqrt{3}$ (c) 12 (d) 1

(12) If the resultant between two forces has greatest value , then the measure of the angle between them equal ....

(a) zero (b) 60° (c) 120° (d) 180°

(13) In the opposite figure :



$T - r =$ ....

(a) $8\sqrt{3}$

(b) 4

(c) $4\sqrt{3}$

(d) 8

(14) If X and Y are two planes and $X \cap Y = \varnothing$, then X .... Y

(a) // (b) $\perp$ (c) = (d) $\subset$

(15) The diameter length of the circle : $x^2 + y^2 + 4x - 2y - 4 = 0$ equal .... length unit.

(a) 6 (b) 2 (c) 12 (d) 24

(16) A regular quadrilateral pyramid whose base area 100 cm^2 , and its height 12 cm.
, then its lateral area = ... cm^2

(a) 520 (b) 260 (c) 130 (d) 360

(17) The area of the circle whose equation is $(x-1)^2 + (y+4)^2 = 49$ equal ....

(a) 7 π (b) 14 π (c) 21 π (d) 49 π

(18) The least number of planes that determine a solid is ....

(a) 2 (b) 3 (c) 4 (d) 5

(19) The lateral area of the right circular cone whose radius length of its base 6 cm. and height is 8 cm. = ... cm^2

(a) 60 π (b) 48 π (c) 28 π (d) 10 π

(20) A right quadrilateral pyramid of height 5 cm. , its base as a rhombus whose diagonal lengths are 6 cm. , 4 cm. , then its volume = ... cm^3

(a) 10 (b) 24 (c) 20 (d) 30

Second Essay questions

Answer the following questions :

1 A right circular cone whose circumference of its base is 6 π and its drawer length 5 cm. , **find :**

(1) The lateral area. **(2)** Volume.

---

2 A body of weight 300 dyne is suspended by two perpendicular strings of lengths 60 cm. , 80 cm. the two other ends are fixed at two point on a horizontal line. Find the tension in each of the two strings.

10 El-Gharbia Governorate  Maths Supervision

First Multiple choice questions



Choose the correct answer from those given :

(1) If $\overrightarrow{F_1} = 2\overrightarrow{i} - 2\overrightarrow{j}$, $\overrightarrow{F_2} = 4\overrightarrow{i} - 8\overrightarrow{j}$, $\overrightarrow{R} = 2a\overrightarrow{i} - 3b\overrightarrow{j}$, then a + b = ...

(a) 3 (b) $3\frac{1}{3}$ (c) $6\frac{1}{3}$ (d) 12

(2) If $\overrightarrow{F_1} = (a , 7)$, $\overrightarrow{F_2} = (-5 , -b)$, $\overrightarrow{F_3} = (1 , 1)$, are in equilibrium , then $(a , b) =$ ....

(a) $(4 , 2)$ (b) $(1 , 2)$ (c) $(4 , 8)$ (d) $(-4 , -8)$

(3) Which two forces from the following pairs , could not have resultant with magnitude = 4 newton ....

(a) 2 newton , 4 newton (b) 3 newton , 3 newton

(c) 2 newton , 6 newton (d) 3 newton , 8 newton

(4) If a body of weight X kg.wt on an inclined smooth plane with 30° to the horizontal , then component of its weight on the direction of plane = ... kg.wt.

(a) $0.5\,X$ (b) $X\sqrt{2}$ (c) $2\,X$ (d) $X\sqrt{3}$

(5) A uniform smooth sphere of weight 1.5 gm.wt and radius length 25 cm., is suspended at a point on its surface by a light string of length 25 cm. and the other end of the string is fixed at the point in vertical smooth wall , if the sphere is in equilibrium , then the tension in the string = ... gm.wt.

(a) $2\sqrt{3}$ (b) 6 (c) $\sqrt{3}$ (d) 3

(6) A body of weight 18 newton. is placed on a smooth plane inclines to the horizontal by angle of measure 30° and kept in equilibrium by a horizontal force of magnitude F newton , then the magnitude of the reaction of the plane on the body = ... newton.

(a) $6\sqrt{3}$ (b) $8\sqrt{3}$ (c) $12\sqrt{3}$ (d) $10\sqrt{3}$

(7) If θ is the angle between two forces 2 newton , 6 newton. and $\theta \in]0 , \pi]$, then the magnitude of their resultant in newton $\in$ ....

(a) $]4 , 8[$ (b) $[4 , 8[$ (c) $]4 , 8]$ (d) $[5 , 8]$

(8) Two forces of magnitudes 7 , F gm.wt and the resultant bisects the angle between them , then F = ... gm.wt.

(a) 7 (b) 8 (c) 9 (d) 5

(9) ABCDOH is a regular hexagon , force 20 newton. acts on $\overrightarrow{AD}$, then the components of the force in direction $\overrightarrow{AC}$, $\overrightarrow{AH}$ respectively are .... newton.

(a) $10\sqrt{3}$ and 10 (b) $5\sqrt{3}$ and 10 (c) 10 and $10\sqrt{3}$ (d) $20\sqrt{3}$ and 20

(10) A body of weight (W) newton. is suspended by two light strings inclined to the vertically by angle $\theta°$ and 30° the body becomes in equilibrium when the tension of the first string equals 12 newton. and the other $12\sqrt{3}$ newton , then the weight of the body W = ... newton.

(a) 60 (b) 25 (c) 36 (d) 24

(11) Two perpendicular forces of magnitudes $2F - 5$, $F + 2$ newton. act at a particle , and the magnitude of their resultant is $3\sqrt{5}$ newton. , then F = ... newton.

(a) 2 (b) 3 (c) 4 (d) 5

(12) If O is the origin of perpendicular Cartesian coordinate plane and $\vec{F} = (8 \text{ kg.wt} , 135°)$ is a force acts at the point O , then the component of $\vec{F}$ in direction of y–axis equals ....

(a) $-4\sqrt{2}$ (b) $4\sqrt{2}$ (c) $4\sqrt{3}$ (d) 4

(13) A regular pyramid whose volume is 12 cm^3 and its base area is 4 cm^2 , then its height = ... cm.

(a) 3 (b) 6 (c) 9 (d) 2

(14) A right circular cone , the radius length of its base = 15 cm. and its height = 20 cm. , then its lateral area = ... cm^2

(a) 375 π (b) 600 π (c) 1500 π (d) 1875 π

(15) Cylinder and cone have same base and height , then $\frac{\text{The volume of the cylinder}}{\text{the volume of the cone}}$ = ...

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{3}{1}$

(16) The least number of planes can be formed a solid is ....

(a) 2 (b) 3 (c) 5 (d) 4

(17) Two circles whose centres M , N are touching internally if $r_1 = 5$ cm. , $r_2 = 8$ cm. , then MN = ... cm.

(a) 13 (b) 3 (c) 4 (d) 1.5

(18) The number of planes passes through two given points is .... planes.

(a) 0 (b) 1 (c) 2 (d) infinite

(19) If x-axis intersects the circle whose equation $(x-3)^2 + (y+2)^2 = 20$ at two points A and B , then the length of $\overline{AB}$ = ... unit length.

(a) 6 (b) 4 (c) 8 (d) 7

(20) A right circular cone its base touch the two positive axes in x y-plane and its drawer is towice its radius base length , the volume of a cone is $72\sqrt{3}\pi$ cm^3. , then the equation of its base is ....

(a) $(x-5)^2 + (y-5)^2 = 25$ (b) $(x-3)^2 + (y-3)^2 = 9$

(c) $(x-6)^2 + (y-6)^2 = 36$ (d) $(x-2)^2 + (y-2)^2 = 4$

Second Essay questions

Answer the following questions :

1 Prove that the two circles : $x^2 + y^2 - 6x - 4y + 12 = 0$, $x^2 + y^2 + 2x - 4y - 4 = 0$ touch each other and find the coordinates of the point of tangency , then find the circle equation whose centre is the point of tangency and passes through the centre of second circle.

2 ABCDHE is a uniform hexagon , the forces of magnitudes 2 , $4\sqrt{3}$, 8 , $2\sqrt{3}$ and 4 newton. act at point A in directions of $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$, $\overrightarrow{AH}$, $\overrightarrow{AE}$ respectively. , find the magnitude and the direction of their resultant.

11 Dakahlia Governorate — Maths Inspection

First Multiple choice questions

Choose the correct answer from those given :

(1) Two forces of magnitudes 3 F , 2 F and the magnitude of their resultant is 5 F , then the measure of the angle enclosed between the two forces equals ....

(a) zero (b) 20° (c) 60° (d) 180°

(2) Two forces of magnitudes 5 , 3 newton and the measure of the angle enclosed between them is 60° , then the magnitude of their resultant R equals ....

(a) 2 (b) 8 (c) 7 (d) 5

(3) $\overrightarrow{F_1} = 2\,\overrightarrow{i} + 3\,\overrightarrow{j}$, $\overrightarrow{F_2} = \overrightarrow{i} + \overrightarrow{j}$ where F_1 , F_2 measured with Newton , then the magnitude of their resultant equals ....

(a) $\sqrt{2}$ (b) $\sqrt{13}$ (c) $\sqrt{5}$ (d) 5

(4) Two forces of equal magnitude act at a point , inclosing between them an angle of measure $\frac{\pi}{3}$, if the magnitude of their resultant is 3 N , then the value of each force is .... N

(a) $\frac{3}{2}$ (b) $\sqrt{3}$ (c) 3 (d) $3\sqrt{3}$

(5) If the resultant of two forces act at a point reaches its maximum value , then the angle between the two forces equals ....

(a) 0° (b) 60° (c) 120° (d) 180°

(6) The maximum and minimum resultant of the two forces of magnitudes 8 N , 13 N respectively are ....

(a) 13 , 8 (b) 13 , 5 (c) 21 , 8 (d) 21 , 5

(7) The forces of magnitudes F , 12 , $8\sqrt{2}$, $10\sqrt{2}$, k newton act on a particle in the directions of East , North , Western North , Western South and South respectively. If the magnitude of the resultant = 4 Newton due to North , then F – K = ... newton

(a) 24 (b) 12 (c) 27 (d) 6

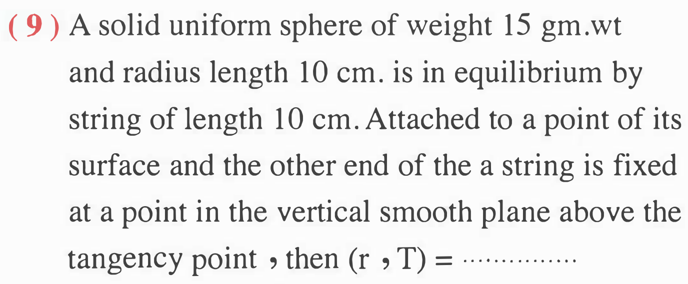
(8) In the opposite figure :

A body of weight 18 newton is placed on a smooth plane inclined to horizontal at an angle of measure 30° , it is kept in equilibrium by a horizontal force of magnitude F newton , then F + r = ………… newton.

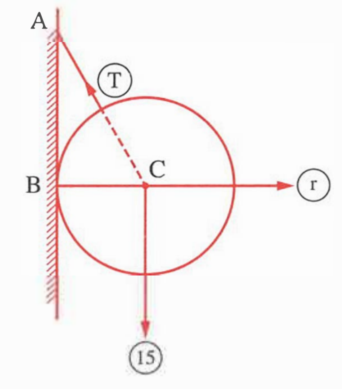


(a) $18\sqrt{3}$ (b) $12\sqrt{3}$

(c) $6\sqrt{3}$ (d) $24\sqrt{3}$



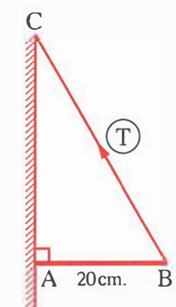
(9) A solid uniform sphere of weight 15 gm.wt and radius length 10 cm. is in equilibrium by string of length 10 cm. Attached to a point of its surface and the other end of the a string is fixed at a point in the vertical smooth plane above the tangency point , then (r , T) = …………



(a) $(4\sqrt{3} , 8\sqrt{3})$ (b) $(5\sqrt{3} , 8\sqrt{3})$

(c) $(5\sqrt{3} , 10\sqrt{3})$ (d) (5 , 10)

(10) $\overline{AB}$ is uniform rod with length 20 cm. and weight 30 newton is connected to a hinge on the vertical wall at A if the rod kept in equilibrium horizontally by a light string connected to the rod at B of the length $20\sqrt{2}$ cm. fixed at a point C on the wall just above A , then magnitude of the reaction of the hinge = ………… newton.



(a) $15\sqrt{2}$ (b) $10\sqrt{2}$

(c) 15 (d) 10

(11) A uniform rod of weight 24 newton is placed on two smooth planes inclined at two angles of measures 60° , 30° to the horizontal , then the magnitude of the pressure on each plane ………… newton.

(a) 12 , 15 (b) $12\sqrt{3}$, 10 (c) 12 , $12\sqrt{3}$ (d) 15 , 13

(12) If $\overrightarrow{F_1} = (5 , -3)$, $\overrightarrow{F_2} = (7 , 4)$, then the resultant of the two forces $\overrightarrow{R}$ = …………

(a) $\overrightarrow{i} + 12\overrightarrow{j}$ (b) $9\overrightarrow{i} + 4\overrightarrow{j}$ (c) $12\overrightarrow{i} + \overrightarrow{j}$ (d) $35\overrightarrow{i} - 12\overrightarrow{j}$

(13) The point that lies on the circle $(x - 2)^2 + y^2 = 13$ from the following is …………

(a) (2 , 3) (b) (2 , 5) (c) (3 , – 2) (d) (4 , 3)

(14) Number of planes that are passing through two given point is …………

(a) 1 (b) 3 (c) 2 (d) An infinite number

(15) The lateral surface area of the right cone whose base radius length is 6 cm. and the height of the cone is 8 cm. equals .... cm^2.

(a) 60π (b) 10π (c) 28π (d) 100π

(16) The diameter length of the circle : $x^2 + y^2 - 2x - 6y + 1 = 0$ equal .... unit length

(a) 3 (b) 5 (c) 4 (d) 6

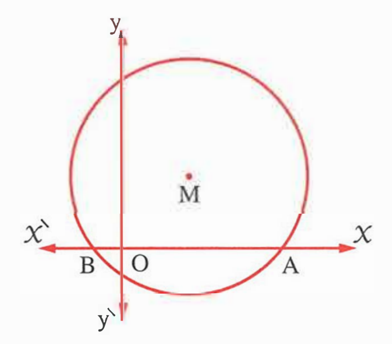
(17) A regular quadrilateral pyramid , the side length of its base is 10 cm. , and its slant height is 13 cm. , then its volume is .... cm^3.

(a) $\frac{1}{3} \times (10)^2 \times 13$ (b) $\frac{1}{3} \times (12)^2 \times 13$ (c) $\frac{1}{3} \times (10)^2 \times 12$ (d) $\frac{1}{3} \times (13)^2 \times 10$

(18) The volume of the right cone whose base is of radius 7 cm. and the length of its drawer is 14 cm. equals .... cm^3.

(a) $49\sqrt{3}\pi$ (b) $49\sqrt{3}$ (c) 49π (d) $\frac{343\sqrt{3}\pi}{3}$

(19) In the opposite figure :



The equation of the circle :

$(x - 2)^2 + (y - 3)^2 = 25$

, then AB = ... length unit.

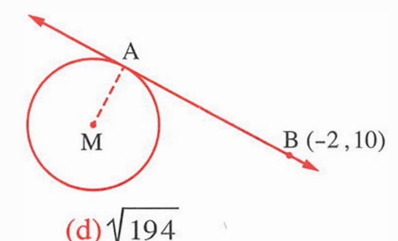
(a) 8

(b) 6

(c) 4

(d) 5

(20) In the opposite figure :



The equation of the circle : $(x - 3)^2 + (y + 2)^2 = 25$

, $\overline{AB}$ is a tangent to the circle M At A where B (– 2 , 10)

, then AB = ... length unit

(a) 13 (b) 5 (c) 12 (d) $\sqrt{194}$

Second Essay questions

Answer the following questions :

1 A cube of wax with edge length 30 cm. transfer into a right circular cone of height 45 cm. Find the length of the radius of the base of the cone , if 8 % of the wax loss during melting and transferring processes. $\left(\pi = \frac{22}{7}\right)$

---

2 A uniform rod of length 100 cm. and weight 150° gm.wt. is hanged freely by two strings and the other ends of the strings are fixed in one point. If the lengths of the two strings are 80 cm. , 60 cm. find the tension in the two strings.



12 Kafr El-Sheikh Governorate

Beala Zone Maths Inspection

First Multiple choice questions

Choose the correct answer from those given :

(1) Two perpendicular forces of magnitudes 4 , 3 newton' their resultant = ... newton

(a) 6 (b) 7 (c) 1 (d) 5

(2) Two forces of magnitudes k and 8 – k , and the resultant bisects the angle between them , then k = ...

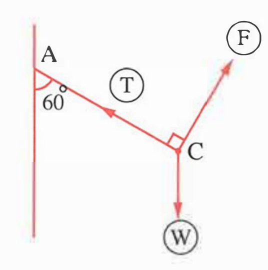
(a) 4 (b) 8 (c) 6 (d) 2

(3) A body of weight W is placed on a smooth inclined plane with the horizontal by an angle of measure θ then it component in the perpendicular direction to the plane = ...

(a) W sin θ (b) W cos θ (c) W tan θ (d) W cot θ

(4) **In the opposite figure :**

A lamp of weight W gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T}$ = ...



(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

(5) If three forces are equal in magnitude meeting at a point and in equilibrium , then the measure of the angle between any two of them = ... – ....

(a) 60° (b) 90° (c) 120° (d) 150°

(6) The number of planes which passes through three collinear points equals ....

(a) 1 (b) 2 (c) 3 (d) infinite number

(7) A regular quadrilateral pyramid , the length of diagonal of its base is $10\sqrt{2}$ cm. , and its height is 6 cm. , then its volume = ... cm³

(a) 100 (b) 200 (c) $100\sqrt{2}$ (d) $200\sqrt{2}$

(8) A triangular pyramid of regular faces , the length of its edge is 12 cm. , then its total surface area = ...cm²

(a) $36\sqrt{3}$ (b) $72\sqrt{3}$ (c) $144\sqrt{3}$ (d) 144

(9) A regular quadrilateral pyramid the side length of its base = the length of its slant height , then the ratio between its lateral surface area and its total surface area is ....

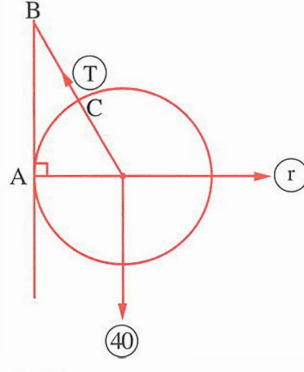
(a) 2 : 3 (b) 3 : 4 (c) 1 : 2 (d) 3 : 5

(10) The volume of a right circular cone is 32π cm^3, and its height is 6 cm. , then radius length of its base is .... cm.

(a) 3 (b) 4 (c) 5 (d) 6

(11) In the opposite figure :

A smooth sphere of radius length 3 cm. and of weight 40 newton rests against a smooth vertical wall. It suspended at a point on its surface by means of a string and the other end is fixed to the wall at a point lies directly above the point of tangency of the sphere and the wall , if BC = 2 cm. , then in case of equilibrium T + r = ... newton



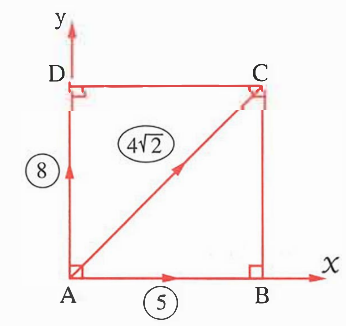
(a) 240 (b) 120 (c) 60 (d) 80

(12) Resolve a force 100 newton act in North in two perpendicular directions the first at the North of West , then the other component is ....

(a) 50 (b) 60 (c) $50\sqrt{2}$ (d) $60\sqrt{2}$

(13) In the opposite figure :

ABCD is a square , the forces of magnitudes 5 , 8 , $4\sqrt{2}$ newton act on $\overrightarrow{AB}$, $\overrightarrow{AD}$ and $\overrightarrow{AC}$ respectively , then the polar form of the resultant is ....



(a) (5 , 54°) (b) (15 , 60°)

(c) (15 , 53° 8̀) (d) (13 , 90°)

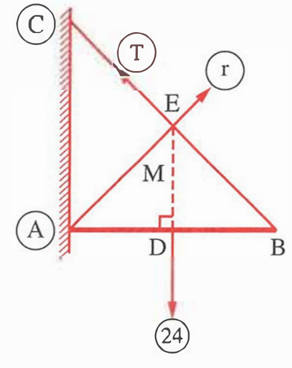
(14) A body of weight 6 kg.wt. is placed on a smooth inclined plane to the horizontal at an angle of measure 30° , is in equilibrium under the effect of a horizontal force , then the reaction of the plane on the body = ... kg.wt.

(a) $2\sqrt{3}$ (b) $4\sqrt{3}$ (c) $12\sqrt{3}$ (d) $8\sqrt{3}$

(15) Given that : $\overrightarrow{F_1} = 3\hat{i} - 2\hat{j}$, $\overrightarrow{F_2} = a\hat{i} - \hat{j}$, $\overrightarrow{F_3} = 4\hat{i} - b\hat{j}$ and their resultant $\overrightarrow{R} = 6\hat{i} - 4\hat{j}$, then a + b = ...

(a) 2 (b) – 2 (c) 0 (d) – 1

(16) In the opposite figure :



$\overline{AB}$ is a uniform rod with length 60 cm. and weight 24 newton is attached with a vertical wall by a hinge at A , the rode is kept in equilibrium horizontally by a mean of a light string connected by its ends with the rod at B and with the vertical wall at the point C above A where AC = 80 cm. , then (T , r) = ...

(a) (10 , 10) (b) (15 , 15) (c) $\left(2\sqrt{10} , 2\sqrt{10}\right)$ (d) $\left(5\sqrt{2} , 5\sqrt{2}\right)$

(17) The right cone is formed from the rotation of a right-angled triangle with complete revolution about one of ....

(a) its diameter

(b) any straight line in the plane

(c) sides of the right angle

(d) straight line passes the vertex and parallel the opposite side

(18) The centre of the circle : $X^2 + y^2 - 6X + 30y = 5$ is ....

(a) (3 , 10) (b) (3 , 15) (c) (3 , − 15) (d) (− 3 , 15)

(19) The length of the tangent from (3 , 3) to the circle : $X^2 + y^2 - 6X + 4y + 4 = 0$ is .... length unit.

(a) 5 (b) 2 (c) 3 (d) 4

(20) If the two forces 5 , 12 kg.wt. acts in a point , and there resultant $\in [13 , 17[$ then the measure of the angle between them $\in$ ....

(a) [0° , 180°] (b) [0° , 90°] (c) [90° , 180°[(d)]0° , 90°]

Second Essay questions

Answer the following questions :

1 Find the lateral area of the right circular cone where the circumference of its base is 88 cm. and its height is 20 cm. ($\pi = \frac{22}{7}$)

---

2 Four coplanar forces act on a particle the first of magnitude 4 newton acts in the Eastern direction and the second of magnitude 2 newton , acts in direction 60° North of the East , the third of magnitude 5 newton , acts in direction 60° North of the West and the fourth of magnitude $3\sqrt{3}$ newton acts in direction 60° West of the South. Find the magnitude and direction of their resultant.

13 Beni-Suef Governorate  Maths Inspection

First Multiple choice questions

Choose the correct answer from those given :

(1) Two forces $F_1 = 3$ newton and $F_2 = 5$ newton act at a point. The measure of the angle between them is 60° , then R = ... newton

(a) 2 (b) 5 (c) 7 (d) 8

(2) Two forces of magnitudes 5F and 4F act at a point. The magnitude of their resultant is 9F , then measure of the angle between them = ...°

(a) zero (b) 60 (c) 90 (d) 180

(3) A body of weight 10 N is placed on a plane that is inclined at 30° to the horizontal. resolve its weight into two components , then the component in the direction of the plane = ...

(a) 5 (b) 7 (c) 9 (d) 10

(4) If $F_1 = (-4 , 2)$, $F_2 = (5 , -7)$, $F_3 = (2 , 9)$, then the magnitude of the resultant of forces = ...

(a) 8 (b) 7 (c) 6 (d) 5

(5) The force R is resolved into two components F_1 and F_2 the force R bisects the angle between the directions of F_1 and F_2 , then ....

(a) $F_1 > F_2$ (b) $F_1 < F_2$ (c) $F_1 = F_2$ (d) Otherwise

(6) The magnitude of resultant of two equal and perpendicular forces each one of them equal 9 newton is .... newton.

(a) 9 (b) $9\sqrt{2}$ (c) 18 (d) 20

(7) If three coplanar and equilibrium forces are represented by the sides of a triangle taken in one cyclic order , then the lengths of the sides of the triangle are proportional to ....

(a) the magnitude of the forces.

(b) the squares of the magnitudes of the forces.

(c) the square of the angle measures.

(d) the angle measures.

(8) Two forces of magnitudes 35 N and 91 N are acting at a particle. Given that the resultant is perpendicular to the first force , then the magnitude of the resultant = ...

(a) 100 (b) 84 (c) 126 (d) 90

(9) A body weighing W newton is placed on a smooth plane inclined at 45° to the horizontal kept in equilibrium under the action of a horizontal force of magnitude 33 newton , then the weight of the body W = ... newton.

(a) 38 (b) 33 (c) 46.66 (d) 75.15

(10) The magnitude of the smallest resultant of two forces of magnitudes 6 newton and 8 newton is ....

(a) 1 (b) 2 (c) 7 (d) 14

(11) The resultant of two forces 5 newton and 9 newton could be ....

(a) 2 (b) 3 (c) 7 (d) 15

(12) The least number of coplanar unequal in magnitude forces could be in equilibrium is ....

(a) 1 (b) 2 (c) 3 (d) 4

(13) Number of planes that are passing through three collinear points ....

(a) 0 (b) 1 (c) 2 (d) an infinite number

(14) The two not parallel planes are intersecting in ....

(a) ray (b) a point (c) a plane (d) a straight line

(15) The lateral area of a right cone with base radius 5 cm. and height 12 cm. is .... cm^2.

(a) 31.4 (b) 188.4 (c) 141.3 (d) 204.2

(16) A regular quadrilateral pyramid has a volume of 372 cm^3. and a height of 31 cm. , then the length of its base = ...

(a) 6 (b) 8 (c) 9 (d) 36

(17) The equation of the circle whose centre (8 , 4) and radius 9 is ....

(a) $(x-8)^2 + (y-4)^2 = 9$ (b) $(x-8)^2 + (y-4)^2 = 81$

(c) $(x-8)^2 + (y-4)^2 = 3$ (d) $(x+8)^2 + (y+4)^2 = 81$

(18) The radius of the circle $x^2 + y^2 + 6x - 8y = 0$ is ....

(a) 4 (b) 5 (c) 10 (d) 25

(19) The circle $(x-5)^2 + (y+4)^2 = 25$ touches ....

(a) x-axis (b) y-axis (c) origin (d) the straight line $x = y$

(20) The volume of a right cone with base diameter 6 cm. and height 4 cm. is .... cm^3

(a) 28.27 (b) 133 (c) 37.7 (d) 12

Second Essay questions

Answer the following questions :

1 A body weighing 12 newton is attached to one end of a light, inextensible string. The other end of the string is fixed to a vertical wall. A horizontal force holds the body in equilibrium when the measure of the angle between the wall and the string is 30°. Find the tension in the string and the horizontal force.

---

2 A right circular cone has base diameter 10 cm. and height 12 cm. Determine the total area.



14 Assiut Governorate — Governmental Language Schools

First Multiple choice questions

Choose the correct answer from those given :

(1) If a body is kept in equilibrium under action of several forces , then the least number of forces could cause equilibrium equals ....

(a) 1 (b) 2 (c) 3 (d) 4

(2) Two forces of magnitudes 3 , 5 newton , then their resultant $\in$ ....

(a) $[3 , 5]$ (b) $]3 , 5[$ (c) $[2 , 8]$ (d) $]8 , 12[$

(3) In the opposite figure :

A body is suspended by the end of a string and its other end fixed at the ceiling of a room. A horizontal force of magnitude 12 gm.wt. pulled the body until the string inclines to the vertical by an angle of measure 30° , then the weight of the body = ... gm.wt.

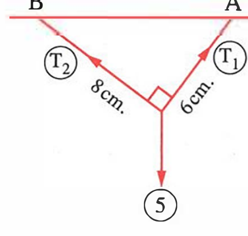


(a) $12\sqrt{3}$ (b) $3\sqrt{12}$

(c) 12 (d) 15



(4) In the opposite figure :



$T_1 \times T_2 =$ ....

(a) 6

(b) $6\sqrt{13}$

(c) $3\sqrt{13}$

(d) 12

(5) If $\overrightarrow{F_1} = 2\,\overrightarrow{i} + 3\,\overrightarrow{j}$, $\overrightarrow{F_2} = \overrightarrow{i} + \overrightarrow{j}$, then the magnitude of their resultant .... force unit

(a) $\sqrt{2}$ (b) $\sqrt{13}$ (c) 5 (d) 25

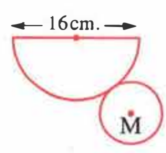
(6) In the regular pyramid : the height .... the slant height.

(a) < (b) > (c) ≤ (d) ≥

(7) The point that lies on the circle $(x - 2)^2 + y^2 = 13$ from the following is ....

(a) (2 , 3) (b) (3 , – 2) (c) (2 , 5) (d) (4 , 3)

(8) If we fold the shown net , it becomes a cone.
Its base radius length is .... cm.



(a) 2.5 (b) 4

(c) 8 (d) 16

(9) Two forces of magnitudes 5 , 3 newton and the measure of the angle enclosed between them is 60° , then the magnitude of their resultant R equals ....

(a) 7 (b) 2 (c) 8 (d) 5

(10) The area of the circle whose equation is : $(x-5)^2 + (y+4)^2 = 7$ equals .... square unit.

(a) 3.5 π (b) 7 π (c) 12.25 π (d) 49 π

(11) In the opposite figure :

A body of weight 90 gm.wt. is attached to the end of a string of 30 cm. long the body is pulled by a horizontal force. It comes to equilibrium when it is 24 cm. apart from wall , then T – F = ... gm.wt.

A
30 cm.
T
C
F
B
24 cm.
90

(a) 150 (b) 120
(c) 50 (d) 30

(12) Which of the following sets of forces could not be in equilibrium ?

(a) 11 , 7 , 5 newton (b) 4 , 6 , 8 newton
(c) 10 , 10 , 8 newton (d) 8 , 4 , 14 newton

(13) The least number of planes that determine a solid is ....

(a) 2 (b) 3 (c) 4 (d) 5

(14) A regular quadrilateral pyramid whose lateral area = 30 cm^2 , and its slant height = 5 cm. , then its base perimeter = ... cm.

(a) 12 (b) 24 (c) 36 (d) 6

(15) A force of magnitude 12 newton , acts in the direction of 30° north of west and is resolved into two perpendicular directions , then the magnitude of its component in the west direction = ... newton.

(a) 6 (b) 12 (c) $12\sqrt{3}$ (d) $6\sqrt{3}$

(16) A triangular pyramid of regular faces , its edge length 6 cm. , then its volume = ... cm^3

(a) 36 (b) $18\sqrt{2}$ (c) $216\sqrt{2}$ (d) 216

(17) All of the following cases form a plane except ....

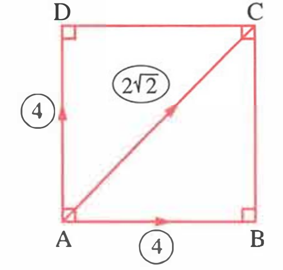
(a) a straight line and a point do not belong to it.

(b) two parallel and not coincident straight lines.

(c) two intersecting straight lines.

(d) two skew straight lines.

(18) In the opposite figure :



ABCD is a square , the forces 4 , $2\sqrt{2}$, 4 newton act in the directions of $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ respectively , then the magnitude of their resultant = ... newton.

(a) 6 (b) $10\sqrt{2}$

(c) $6\sqrt{2}$ (d) $6\sqrt{3}$

(19) Two forces of magnitudes F and $\sqrt{3}$ F act at a particle , if the magnitude of their resultant is 2 F , then the measure of the angle between the two forces = ...

(a) 90° (b) 60° (c) 120° (d) 30°

(20) A body of weight W is placed on an inclined plane makes angle of measure θ to the horizontal , then the component of its weight in direction of line of greatest slope equals ....

(a) W sin θ (b) W cos θ (c) W tan θ (d) W cot θ

Second Essay questions

Answer the following questions :

1 A uniform smooth sphere of weight 10 gm.wt. and radius length 30 cm. is hanged from a point on its surface by a light string of length 30 cm. and the other end of the string is fixed in a point on a vertical smooth wall. Find in the case of equilibrium each of :

(1) The tension in the string.

(2) The reaction of the wall on the sphere.

---

2 Form the general equation of the circle in which $\overline{AB}$ is diameter of it where :
A (6 , – 4) , B (0 , 2)

15 Aswan Governorate



Maths Inspection

First Multiple choice questions

Choose the correct answer from those given :

(1) A force of magnitude 6 newton acts in direction of North. It is resolved into two perpendicular components , so its component in direction of the East of magnitude .... newton.

(a) zero (b) 3 (c) 2 (d) 6

(2) The area of a regular polygon with 12 sides. If the circle $x^2 + y^2 - 16 = 0$ passes through its vertices = ... square unit.

(a) 24 (b) 36 (c) 48 (d) 72

(3) If a body of weight (W) is placed on an inclined smooth plane makes an angle of measure (θ) with the horizontal , then its weight component in direction of the plane is

(a) $W \sin \theta$ (b) $W \cos \theta$ (c) $W \tan \theta$ (d) $W \csc \theta$

(4) A regular quadrilateral pyramid , if the length of its base side is 6 cm. the length of its lateral edge is 8 cm. , then the length of its height = ... cm.

(a) $5\sqrt{2}$ (b) $\sqrt{46}$ (c) $\sqrt{85}$ (d) 48

(5) Three coplanar forces meeting at a point , their magnitudes are 40 , 30 , 40 newton , the first is in direction 60° West of North , the second is towards West and the third in the direction 30° North of East , then the magnitude of their resultant equal .... newton.

(a) 30 (b) 110 (c) 60 (d) 50

(6) If the magnitude of the resultant of two forces act at a point is maximum value , then the measure of the angle between the two forces equal ....

(a) 180° (b) 120° (c) zero (d) 60°

(7) If the total area of a triangular regular faces pyramid is $9\sqrt{3}$ cm^2 , then the length of its edge .... cm.

(a) 3 (b) 9 (c) 27 (d) 2

(8) The resultant of two forces 6 newton and 8 newton could be .... newton.

(a) 20 (b) 15 (c) 12 (d) 1

(9) The circumference of the circle whose equation is $x^2 + y^2 = 16$ is .... length units.

(a) 4π (b) 8π (c) 64π (d) 16π

(10) Two forces act at a point. The magnitude of the two forces are 6 , 10 newton and their resultant is perpendicular to one of them , then the magnitude of their resultant = ... newton.

(a) 8 (b) 3 (c) 4 (d) 16

(11) If A , B and C are three points determine a plane , then ....

(a) AB = BC = AC (b) AB + BC = AC (c) AB + BC > AC (d) AB + BC < AC

(12) Two forces act at a point. The magnitude of the two forces are F , 2 newton and the measure of the angle between them is 60° , if their resultant equal $2\sqrt{3}$ newton , then F = ... newton.

(a) 2 (b) 4 (c) 8 (d) 12

(13) Two forces of magnitudes $3\sqrt{2}$ and 6 newton and the measure of the angle between them is 135° , then the measure of the angle between their resultant and the second force is ....

(a) 30° (b) 45° (c) 60° (d) 90°

(14) In the hexagonal pyramid :
number of faces + number of vertices – number of edges = ...

(a) 1 (b) 2 (c) 3 (d) 4

(15) If a force of magnitude (F) is in equilibrium with two forces of magnitudes 3 and 4 newton and the measure of the angle between them is 90° , then F = ... newton.

(a) 7 (b) 5 (c) 1 (d) 6

(16) If the volume of a right circular cone is 9π cm^3. And the length of its base radius equals the length of its height , then its base area = ... cm^2.

(a) 9π (b) 3π (c) 27π (d) 12π

(17) A body of weight 28 kg.wt. is suspended by two perpendicular strings , if the measure of the angle between one string and the line of the weight is 120° , then the magnitude of the tension of this string equals .... kg.wt.

(a) 14 (b) 28 (c) $14\sqrt{3}$ (d) 12

(18) The point (2 , 2) lies .... the circle whose equation $x^2 + y^2 = 9$

(a) on (b) outside (c) inside (d) in the center of

(19) A uniform rod of weight 20 newton which is movable around a hinge at one of its ends is pulled a side by a horizontal force of magnitude 10 newton acting on the other end , then the measure of the angle of inclination of the rod to the vertical when it is in equilibrium = ...

(a) 60° (b) 45° (c) 30° (d) 90°

(20) Two forces of magnitudes 9 , 6 newton , the maximum value of their resultant is .... newton.

(a) 20 (b) 30 (c) 10 (d) 15

Second Essay questions

Answer the following questions :

1 A metallic sphere of weight 15 kg.wt. is put such that it touches two smooth planes , one of them is vertical and the other inclines to the vertical by an angle of measure 30°
Find the reaction of the two planes.

---

2 Determine the position of the circle $C_1 : (x - 5)^2 + (y + 2)^2 = 4$ with respect to the circle , $C_2 : (x + 7)^2 + (y - 3)^2 = 1$




كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

خطوة 2 اختيار اسم الطابعة بتاعتك

خطوة 3 كتابة الصفحات المراد طباعتها نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

خطوة 4 اختيار نوع الورق

خطوة 5 اختيار A4

خطوة 6

حمل الآن

مجانا وحصريا

امتحانات رقم (2)







2024

1 **Cairo Governorate**  El-Salam Educational Zone Math's Supervision

First Multiple choice questions



Choose the correct answer from the given ones :

(1) Two forces of magnitudes 4 F , 5 F newton , their resultant 9 F newton , then the measure of the angle included between them = ……………

(a) 0°　(b) 90°　(c) 180°　(d) 120°

(2) Two perpendicular forces of magnitudes F , 12 newton , their resultant 13 newton , then F = …………… N

(a) 5　(b) 12　(c) 1　(d) zero

(3) Two forces of magnitudes F , F newton , their resultant F newton , then the measure of the angle included between them = ……………

(a) 90°　(b) 120°　(c) 180°　(d) zero°

(4) Two forces of magnitude F , 6 newton , then their resultant perpendicular to the first force , the measure of the angle included between them 120° , then F = ……………

(a) 3　(b) 6　(c) $6\sqrt{2}$　(d) 12

(5) Two forces of magnitude 3 , 5 newton , then their resultant ∈ ……………

(a) [3 , 5]　(b)]3 , 5[　(c) [2 , 8]　(d)]2 , 8[

(6) A body of weight W is placed on a smooth inclined plane with the horizontal by an angle of measure θ , then its component in the direction of the line of greatest slope ……………

(a) W sin θ　(b) W cos θ　(c) W tan θ　(d) W cot θ

(7) A force of magnitude 12 newtons acts in direction 30° North of the East , then its component in the East direction = …………… newton.

(a) 6　(b) $6\sqrt{3}$　(c) 12　(d) 24

(8) Some coplanar forces meeting at a point , and the sum of their components in the direction of X-axis equal 3 newton and the sum of their components in direction of y-axis equal 4 newton , then their resultant = …………… newton.

(a) 3　(b) 4　(c) 5　(d) 7

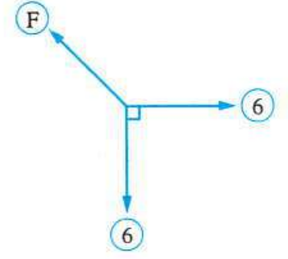
(9) Some coplanar forces act at a point , their resultant makes with positive direction of X-axis an angle of tangent $\frac{3}{4}$ and the sum of components of these forces in direction of X-axis equal 12 newton , then the sum of their component in direction of y-axis = ... newton

(a) 9 (b) 12 (c) 16 (d) 20

(10) Two equilibrium forces , $\overrightarrow{F_1} = (4 , a)$ and $\overrightarrow{F_2} = (b , -5)$, then a + b = ...

(a) 1 (b) – 1 (c) 9 (d) – 9

(11) In the opposite figure :



the forces are in equilibrium

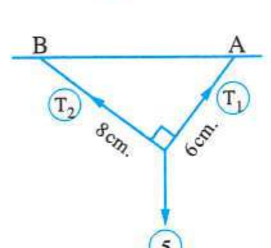
, then F = ...

(a) 6 (b) $6\sqrt{2}$

(c) $5\sqrt{2}$ (d) 12



(12) In the opposite figure :



$T_1 \times T_2 =$ ....

(a) 6

(b) $6\sqrt{2}$

(c) $3\sqrt{2}$

(d) 12

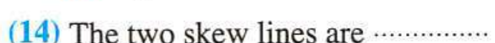
(13) A sphere of weight 6 N attached by a string of length equal the radius length of the sphere , then the reaction of the wall = ... N



(a) $2\sqrt{3}$ (b) 6



(c) $6\sqrt{3}$ (d) 12



(14) The two skew lines are ....

(a) not intersecting. (b) not parallel.

(c) not lie on one plane. (d) all the previous.

(15) The least number of non-collinear points that determine a plane ....

(a) one. (b) two. (c) three. (d) four.

(16) The base of the quadrilateral regular pyramid is a ....

(a) triangle. (b) square. (c) rectangle. (d) rhombus.

(17) A triangular pyramid of reqular faces , its edge length 6 cm. , then its volume = ... cm^3.

(a) 36 (b) 216 (c) $216\sqrt{2}$ (d) $18\sqrt{2}$

(18) A right cone , its lateral area 18π cm^2 , its drawer length 6 cm. , then the length of radius of its base = ... cm.

(a) 3 (b) 6 (c) 9 (d) 12

(19) If the equation of a circle $x^2 + y^2 = 36$, then its area = ... cm^2

(a) 36 (b) 6π (c) 12π (d) 36π

(20) If the equation of a circle is $x^2 + y^2 + 4x - 6y - 10 = 0$, then its centre is ....

(a) (4 , – 6) (b) (2 , – 3) (c) (– 2 , 3) (d) (– 4 , 6)

Second Essay questions

Answer the following questions :

1 A body of weight 12 newton is placed on an inclined plane with the horizonal by an angle of measure 30° , if the body kept in equilibrium under the action of a horizontal force. Find the magnitude of this force and the normal reaction of the plane.

---

2 A regular quadrilateral pyramid , the perimeter of its base = 40 cm. and its height 13 cm. find its volume.

2 Cairo Governorate



Shoubra Educational Zone
Mathematics Supervision

First Multiple choice questions



Interactive test ②

Choose the correct answer from the given ones :

(1) Two forces of magnitudes 4 , 5 newton and the cosine of their included angle is $\frac{-2}{5}$, then the magnitude of their resultant = ... newton.

(a) 15 (b) 9 (c) 5 (d) 13

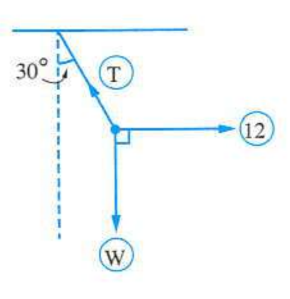
(2) If $\overrightarrow{F} = 3\overrightarrow{i} - 4\overrightarrow{j}$, then $\|\overrightarrow{F}\|$ = ... force unit.

(a) – 1 (b) 5 (c) 7 (d) 25

(3) A force of magnitude 12 newton , acts in the direction of 30° north of west and is resolved into two perpendicualr directions , then the magnitude of its component in the west direction = ... newton.

(a) 6 (b) 12 (c) $12\sqrt{3}$ (d) $6\sqrt{3}$

(4) In the opposite figure :



A body is suspended by the end of a string and its other end fixed at the ceiling of a room. A horizontal force of magnitude 12 gm.wt. pulled the body until the string inclines to the vertical by an angle of measure 30° , then the weight of the body = ... gm.wt.

(a) $12\sqrt{3}$ (b) $3\sqrt{12}$ (c) 12 (d) 15

(5) If a body is in equilibrium under the action of three coplanar forces , meeting at a point and their magnitudes are 7 , 8 , 5 newton , then the measure of the angle between the second and the third forces = ...

(a) 150° (b) 120° (c) 90° (d) 60°

(6) In the regular pyramid : the heigth .... the slant height.

(a) $<$ (b) $>$ (c) $\leq$ (d) $\geq$

(7) If the point (5 , 2) lies on the circle : $(x-3)^2 + (y+a)^2 = 13$, then : a = ...

(a) ± 5 (b) ± 1 (c) 5 or – 1 (d) – 5 or 1

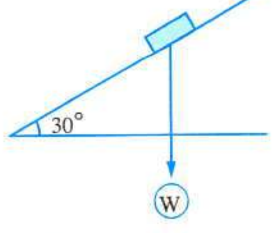
(8) Two forces act at a point of magnitudes 2 F , 3 F newton and the magnitude of their resultant 5 F newton , then the measure of their included angle = ...

(a) 0° (b) 60° (c) 120° (d) 180°

(9) If $\overrightarrow{F_1} = 2\,\overrightarrow{i} + 3\,\overrightarrow{j}$, $\overrightarrow{F_2} = \overrightarrow{i} + \overrightarrow{j}$, then the magnitude of their resultant = ... force unit.

(a) $\sqrt{2}$ (b) $\sqrt{13}$ (c) 5 (d) 25

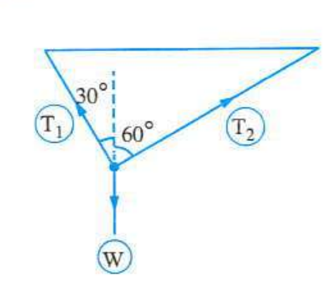
(10) In the opposite figure :



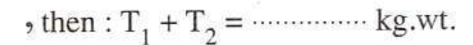
A body of weight (W) is placed on a smooth inclined plane inclines to the horizontal by an angle of measure 30° , then the component of its weight along the greatest slope of the plane is ....

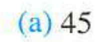
(a) W (b) W sin 30° (c) W cos 30° (d) W tan 30°

(11) In the opposite figure :



A body of weight 36 kg.wt. is suspended by two strings incline to the vertical by angles of measures 30° , 60°


, then : $T_1 + T_2 =$ .... kg.wt.


(a) 45 (b) $9 + 18\sqrt{3}$

(c) $36 + 18\sqrt{3}$ (d) $18\left(1 + \sqrt{3}\right)$

(12) The least number of planes that determine a solid is ....

(a) 2 (b) 3 (c) 4 (d) 5

(13) If the side length of the base of a regular quadrilateral pyramid equals 40 cm. and its height equals $20\sqrt{3}$ cm. , then its lateral surface area = ... cm^2.

(a) 3200 (b) 4300 (c) 6300 (d) 3400

(14) The length of diameter of the circle whose equation is :

$4x^2 + 4y^2 + 16x - 8y - 16 = 0$ equals .... length unit.

(a) 3 (b) 6 (c) 12 (d) 24

(15) Two forces act at a point their magnitudes are 7 , F newton and their resultant bisects the angle between them , then F = ... newton.

(a) 49 (b) 14 (c) 7 (d) $7\sqrt{2}$

(16) Two forces of magnitudes 3 , F newton act at a point , include an angle of measure 120° and their resultant perpendicular to the first force , then F = ... newton.

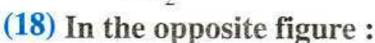
(a) 0 (b) $3\sqrt{3}$ (c) 1.5 (d) 6

(17) In the opposite figure :

The force R is resolved into two components F_1 , F_2 , then : $\frac{F_1}{F_2}$ = ...

(a) $\sin(\theta_1 + \theta_2)$ (b) $\frac{\sin\theta_2}{\sin\theta_1}$

(c) $\frac{\sin\theta_1}{\sin\theta_2}$ (d) $\sin\frac{\theta_1}{\theta_2}$



(18) In the opposite figure :

ABCD is a square , the forces 4 , 4 , $2\sqrt{2}$ newton act in the directions of $\overrightarrow{AB}$, $\overrightarrow{AD}$, $\overrightarrow{AC}$ respectively , then the magnitude of their resultant = ... newton.

(a) 6 (b) $10\sqrt{2}$ (c) $6\sqrt{2}$ (d) $6\sqrt{3}$

(19) The two straight lines are skew if they are ....

(a) Not contained in one plane (b) Not parallel

(c) Not perpendicular (d) Not intersecting

(20) The volume of a right cone which the circumference of its base equals 44 cm. and its height 15 cm. equals .... cm^3. (where $\pi = \frac{22}{7}$)

(a) 110 (b) 235 (c) 245 (d) 770

Second Essay questions

Answer the following questions :

1 A body of weight 100 gm.wt. is suspended by two strings of lengths 60 cm. , 80 cm. , the other two ends are fixed at two points on the same horizontal line and the distance between them equals 100 cm. Find the tension in each string in the equilibrium position.

---

2 Form the general equation of the circle in which $\overline{AB}$ is diameter of it where :

A (6 , – 4) , B (0 , 2)

3 Cairo Governorate



Educational Amdinistration of Al-Shrouk

First Multiple choice questions



Choose the correct answer from the given ones :

(1) The least number of planes that determine a solid is ....

(a) 2 (b) 3 (c) 4 (d) 5

(2) A lamp of weight 30 gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force (F) perpendicular to the string when it is inclined to the vertical by an angle of measure 60° where T is the tension of the string , then $\frac{F}{T}$ = ...

(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

(3) A force of magnitude 150 newton acts in the direction 30° North of the west is resolved into two perpendicular components , then the magnitude of the component in North direction = ... newton.

(a) 30 (b) 75 (c) $75\sqrt{3}$ (d) 150

(4) The ratio between the edge length of the triangular pyramid of regular faces and its height = ...

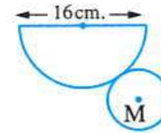
(a) $\sqrt{2} : \sqrt{3}$ (b) $\sqrt{3} : 2$ (c) $\sqrt{6} : 3$ (d) $\sqrt{6} : 2$

(5) Two forces of magnitudes 6 N and 8 N. the magnitude of their resultant is 10 N. , then the measure of the angle between them = ...

(a) 60° (b) 90° (c) 120° (d) 150°

(6) If we fold the shown net , it becomes a cone.

Its base radius length is .... cm.



(a) 2.5 (b) 4 (c) 8 (d) 16

(7) Two forces of magnitudes F and F act at a particle and the measure of the angle between them is 120° , then their resultant = ... newton.

(a) $\sqrt{2}$ F (b) F (c) 2 F (d) $2\sqrt{F}$

(8) A regular quadrilateral pyramid whose base perimeter is 36 and its height 10 cm. , then its volume = ... cm^3.

(a) 180 (b) 270 (c) 360 (d) 810

(9) Two forces of magnitude 3 and F newton act at a point the measure of the angle between them is $\frac{2\pi}{3}$, if the resultant is perpendicular to the first force , then F = ... newton.

(a) 6 (b) 3 (c) $\sqrt{2}$ (d) 6

(10) The difference between the greatest and smallest values of the resultant of two forces of magnitudes 5 and 8 newton = ...

(a) 5 (b) 8 (c) 10 (d) 13

(11) If the radius length of the base of a right circular cone = 6 cm. , and its height = 8 cm. , then its lateral surface area = ... cm^2.

(a) 60 π (b) 48 π (c) 69 π (d) 96 π

(12) If the forces $\overrightarrow{F_1} = a\,\overrightarrow{i} - 6\,\overrightarrow{j}$, $\overrightarrow{F_2} = -3\,\overrightarrow{i} + 4\,\overrightarrow{j}$, $\overrightarrow{F_3} = 9\,\overrightarrow{i} + 2\,\overrightarrow{j}$ are equilibrium , then a = ...

(a) 6 (b) – 6 (c) 1 (d) 15

(13) A body of weigth 6 newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° , it is kept in equilibrium by a horizontal force , then the magnitude of the reaction of the plane = ... N.

(a) $2\sqrt{3}$ (b) $3\sqrt{3}$ (c) $4\sqrt{3}$ (d) $8\sqrt{3}$

(14) The circumference of the circle whose equation : $(x-3)^2 + (y+5)^2 = 25$ is .... length units.

(a) 2 π (b) 3 π (c) 10 π (d) 25 π

(15) ABCD is a rectangle AB = 4 cm. , BC = 3 cm. , forces of magnitudes 4 , 10 , 6 newton. act along $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ respectively , the resultant of these forces makes with $\overrightarrow{AB}$ an angle of measure ....

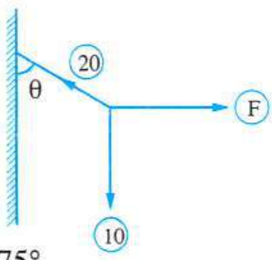
(a) 45° (b) 60° (c) 30° (d) 90°

(16) Two forces of magnitudes 8 and 8 N , the measure of the angle between them is 60° , then the magnitude of their resultant is .... N

(a) $8\sqrt{3}$ (b) 8 (c) $4\sqrt{3}$ (d) 4

(17) In the opposite figure :

A body of weight 10 N , is suspended by a string which inclines to the vertical by an angle of measure θ , it is in equilibrium under the effect of a horizontal force F , then θ = ...



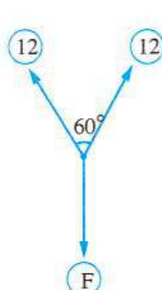
(a) 30° (b) 45° (c) 60° (d) 75°

(18) If the total area of a triangular of pyramid of regular faces is $9\sqrt{3}$ cm², then the length of its edge = ... cm.

(a) 3 (b) 9 (c) 27 (d) $\sqrt{3}$

(19) In the opposite figure :

The system is in equilibrium , then F = ... newton.



(a) $12\sqrt{2}$ (b) $12\sqrt{3}$

(c) 6 (d) 12

(20) Which of the following sets of forces could not be in equilibrium ?

(a) 11 , 7 , 5 newton. (b) 4 , 6 , 8 newton.

(c) 10 , 10 , 8 newton. (d) 8 , 4 , 14 newton.

Second Essay questions

Answer the following questions :

1 Find the equation of the circle whose centre is (7 , – 5) and passes through the point (3 , – 2)

2 A uniform sphere of weight 24 newton and its radius length 6 cm. If it is in equilibrium by a string of length 4 cm. attached to a point of its surface and the other end of the string is fixed at a point in the vertical smooth wall. Find the tension of the string and the reaction of the wall.



First Multiple choice questions



Interactive test ④

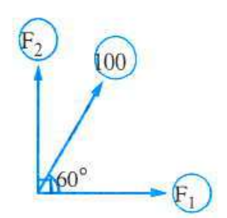
Choose the correct answer from the given ones :

(1) Two equal forces in magnitude , the magnitude of their resultant = $7\sqrt{3}$ newton and the measure of the included angle is $\frac{\pi}{3}$, then the magnitude of each of them = ... newton.

(a) 3 (b) $5\sqrt{3}$ (c) 5 (d) 7

(2) **In the opposite figure :**

If the force of magnitude 100 newton is resolved into two forces $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$ and the force is measured by newton , then $(F_1 , F_2) =$ ....



(a) $\left(50 , 50\sqrt{3}\right)$ (b) $\left(50\sqrt{3} , 10\right)$ (c) $(50 , 50)$ (d) $(10 , 10)$

(3) If $\overrightarrow{F_1} = 3\,\overrightarrow{i} + 2\,\overrightarrow{j}$, $\overrightarrow{F_2} = a\,\overrightarrow{i} + 7\,\overrightarrow{j}$, $\overrightarrow{F_3} = -12\,\overrightarrow{i} + b\,\overrightarrow{j}$ are three coplanar forces meeting at a point and the resultant $\overrightarrow{R} = \left(6\sqrt{2} , \frac{3}{4}\pi\right)$, then $a - b =$ ....

(a) -3 (b) 3 (c) zero (d) 6

(4) The force which is in equilibrium with two perpendicular forces F , F newton makes with one of the two forces an angle of measure ....°

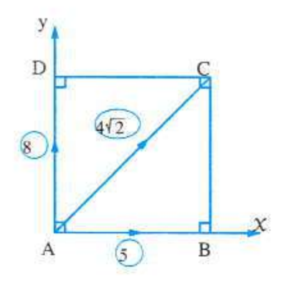
(a) 90 (b) 120 (c) 135 (d) 150

(5) Two forces act at a point , the magnitude of the two forces are 6 , 3 newton and their resultant is perpendicular to one of them , then the magnitude of their resultant = ... newton.

(a) 3 (b) $3\sqrt{3}$ (c) 6 (d) $6\sqrt{3}$

(6) **In the opposite figure :**

ABCD is a square , the forces of magnitudes 5 , 8 , $4\sqrt{2}$ newton act on $\overrightarrow{AB}$, $\overrightarrow{AD}$ and $\overrightarrow{AC}$ respectively , then the polar form of the resultant is ....



(a) $(5 , 54°)$ (b) $(15 , 60°)$

(c) $(15 , 53°\ 8')$ (d) $(13 , 90°)$

(7) A triangular regular faces pyramid , its edge length 10 cm. , then its total area equal .... cm^2.

(a) 40 (b) 100 (c) $100\sqrt{3}$ (d) $25\sqrt{3}$

(8) If the length of the diameter of the base of a right circular cone is 12 cm. and its height 8 cm. , then its lateral area equal .... cm^2.

(a) $60\,\pi$ (b) $28\,\pi$ (c) $10\,\pi$ (d) $48\,\pi$

(9) The area of the circle whose equation is : $(X - 5)^2 + (y + 4)^2 = 7$ equals .... square unit.

(a) $3.5\,\pi$ (b) $7\,\pi$ (c) $12.25\,\pi$ (d) $49\,\pi$

(10) The equation of the circle whose centre (4 , 3) and touches X-axis is ....

(a) $(X-3)^2+(y-4)^2=16$ (b) $(X-4)^2+(y-3)^2=9$

(c) $(X+3)^2+(y+4)^2=9$ (d) $(X+3)^2+(y-4)^2=16$

(11) Two forces are equal in magnitude and each of them equal F newton if the magnitude of the resultant is F newton , then the measure of the included angle = ...

(a) 0 (b) 30° (c) 60° (d) 120°

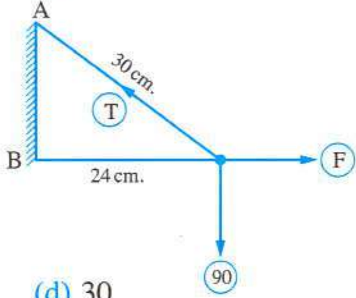
(12) A force of magnitude $10\sqrt{2}$ newton acts in the direction of East it is resolved into two perpendicular components , one in the direction of eastern north , then the components of the force in the perpendicular direction is .... newton.

(a) 10 (b) 20 (c) $10\sqrt{3}$ (d) $10\sqrt{2}$

(13) Three coplanar forces $\overrightarrow{F_1}=6\,\hat{i}+7\,\hat{j}$, $\overrightarrow{F_2}=a\,\hat{i}-9\,\hat{j}$, $\overrightarrow{F_3}=5\,\hat{i}+b\,\hat{j}$ act at a particle and they are in equilibrium , then a + 2 b = ...

(a) – 9 (b) 5 (c) 7 (d) – 7

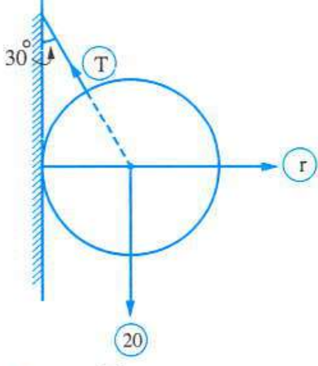
(14) In the opposite figure :



A body of weight 90 gm.wt. is attached to the end of a string of 30 cm. long the body is pulled by a horizontal force. It comes to equilibrium when it is 24 cm. apart from wall $\overline{AB}$, then T – F = ... gm.wt.

(a) 150 (b) 120 (c) 50 (d) 30

(15) In the opposite figure :



A smooth sphere of weight 20 newton rests against a smooth vertical wall. It suspended at a point on its surface by means of a string and the other end is fixed to the wall at a point lies directly above the point of tangency of the sphere and the wall , if the string makes with the vertical an angle of measure 30° , then in case of equilibrium T : r = ...

(a) 2 : 1 (b) 1 : 2 (c) $\sqrt{3}:1$ (d) $2:\sqrt{3}$

(16) If $\overrightarrow{F_1}=\hat{i}-\hat{j}$, $\overrightarrow{F_2}=2\,\hat{i}-4\,\hat{j}$, $\overrightarrow{R}=2\,a\,\hat{i}-3\,b\,\hat{j}$, then a + b = ...

(a) 3 (b) $3\frac{1}{3}$ (c) $3\frac{1}{6}$ (d) 12

(17) If the total area of a triangular pyramid of regular faces = $36\sqrt{3}$ cm^2 , then the sum of its edges lengths = ... cm.

(a) 6 (b) 12 (c) 18 (d) 36

(18) A right circular cone , the length of its drawer equals the length of the diameter of its base , then its total area = ... cm^2.

(a) $3 \pi r^2$ (b) $3 \pi r^3$ (c) $4 \pi r^2$ (d) $4 \pi r^3$

(19) Three equal forces in magnitude meeting at a point and they are in equilibrium , then the measure of the angle between each two forces = ...

(a) 60° (b) 90° (c) 120° (d) 150°

(20) Number of planes that are passing through two different parallel straight lines = ...

(a) 1 (b) 2 (c) 3 (d) an infinite number.

Second Essay questions

Answer the following questions :

1 A regular quadrilateral pyramid whose base area is 9 cm^2 and the length of its lateral edge is 5 cm. Find its volume.

---

2 A smooth sphere of weight 15 newton is on a smooth vertical wall and suspended by a light string from a point on its surface. The other end of the string is attached to a point on the wall above the point of contact between the wall and the sphere. If the length of the string equals the radius length of the sphere. Find the pressure on the wall and the tension in the string in case of equilibrium.

5 Giza Governorate

Awseem Eductional Directorate
Mathematics Inspection

First Multiple choice questions

Interactive test (5)

Choose the correct answer from the given ones :

(1) Two forces of magnitudes 2 F , 5 F newton and the magnitude of their resultant is 3 F newton , then the measure of the angle between the two forces = ...°

(a) zero (b) 60 (c) 90 (d) 180

(2) Two forces are of magnitudes 8 , F gm.wt. and their resultant bisects the angle between them then F = ... gm.wt.

(a) 4 (b) 16 (c) 2 (d) 8

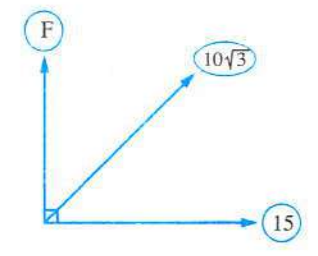
(3) Two forces of magnitudes 3 , F newton and the measure of the angle between them is 120° and their resultant is perpendicular to the first force , then F = ... N

(a) 1.5 (b) 3 (c) $3\sqrt{3}$ (d) 6

(4) A force of magnitude 6 newton acts in the North direction is resolved into two perpendicular components , then its component in the Eastern North direction = ... newton.

(a) zero (b) 3 (c) $3\sqrt{2}$ (d) 6

(5) In the opposite figure :



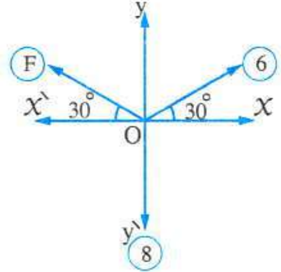
A force of magnitude $10\sqrt{3}$ newton is resolved into two perpendicular components , the magnitude of one of them is 15 newton , then the magnitude of the other component = ... newton.

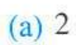
(a) 5 (b) $5\sqrt{3}$ (c) 10 (d) 15

(6) If the resultant of the two forces $\overrightarrow{F_1} = 2\,\overrightarrow{i} - 2\,\overrightarrow{j}$, $\overrightarrow{F_2} = 4\,\overrightarrow{i} - 8\,\overrightarrow{j}$ is $\overrightarrow{R} = 2\,a\,\overrightarrow{i} - 5\,b\,\overrightarrow{j}$, then a + b = ...

(a) 3 (b) 2 (c) 5 (d) 1

(7) If the resultant of the forces in the opposite figure is in the direction of y-axis , then F = ... newton.





(a) 2 (b) 6

(c) 8 (d) 14

(8) If three forces are equal in magnitude , meeting at a point and in equilibrium , then the measure of the angle between any two of them = ...

(a) 60° (b) 90° (c) 120° (d) 150°

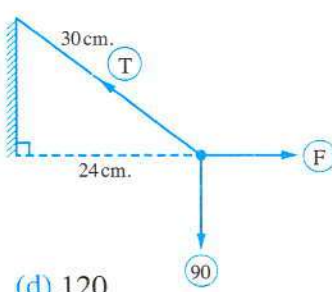
(9) Three forces are meeting at a point and are in equilibrium , if 7 , 3 are the magnitudes of two of them , then the magnitude of the third could be .... newton.

(a) 3 (b) 5 (c) 11 (d) 2

(10) If the force of magnitude F is in equilibrium with the two forces of magnitudes 5 , 3 and enclosing an angle between them of measure 60° , then F = ... newton.

(a) $\sqrt{34}$ (b) $\sqrt{19}$ (c) 7 (d) 15

(11) In the opposite figure :



A body of weight 90 gm.wt. is attached to a string of length 30 cm. the body is pulled by a horizontal force to be in equilibrium at a distance 24 cm. from the wall , then T = ... gm.wt.



(a) 50 (b) 30 (c) 150 (d) 120

(12) The least number of unequal forces could be in equilibrium is ....

(a) 1 (b) 2 (c) 3 (d) 4

(13) If the force of magnitude F is in equilibrium with the two perpendicualr forces of magnitudes 8 , 15 , then F = ... newton.

(a) 7 (b) 21 (c) 23 (d) 17

(14) The number of planes that pass through two given points is ....

(a) 1 (b) 2 (c) 3 (d) an infinite number.

(15) MABCD is a regular quadrilateral pyramid the side length of its base is 10 cm. and its height is 12 cm. , then its volume = ... cm^3.

(a) 300 (b) 400 (c) 450 (d) 120

(16) A regular quadrilateral pyramid of lateral surface area 30 cm^2 and its lateral height is 5 cm. , then the perimeter of its base is .... cm.

(a) 12 (b) 24 (c) 36 (d) 40

(17) A right circular cone its base radius length is 6 cm. and the length of its drawer is 10 cm. , then its volume is .... cm^3.

(a) 32π (b) 64π (c) 96π (d) 288π

(18) A right circular cone its base radius length is 15 cm. and the length of its drawer is 25 cm. , then its lateral surface area is .... cm^2.

(a) 375π (b) 600π (c) 1500π (d) 1875π

(19) The centre of the circle : $x^2 + y^2 - 6x + 8y = 0$ is the point ....

(a) (4 , – 3) (b) (– 3 , 4) (c) (3 , – 4) (d) (– 4 , 3)

(20) The circumference of the circle whose equation is : $x^2 + y^2 = 16$ is ....

(a) 4π (b) 8π (c) 10π (d) 16π

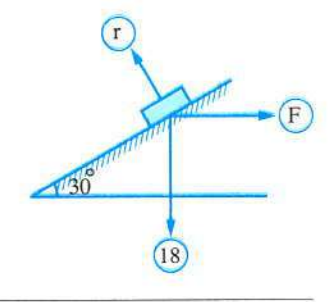
Second | Essay questions

Answer the following questions :

1 **In the opposite figure :**

A body of weight 18 newton is placed on a smooth inclined plane to the horizontal at an angle of measure 30° is in equilibrium under the effect of a horizontal force $\overrightarrow{F}$

Find : the value of each of F , r



2 Write the general form of the equation of the circle whose center is (– 2 , 3) and the length of its diameter is 18 length units.



6 Alexandria Governorate

East Educational Zone
Mathematics Inspection

First Multiple choice questions



Choose the correct answer from the given ones :

(1) If the resultant of two forces acting at a point reached its minimum value , then the measure of the angle between them = ...

(a) zero°   (b) 60°   (c) 120°   (d) 180°

(2) A triangular regular faces pyramid , its edge length ℓ cm. , then the total surface area = ... cm^2.

(a) ℓ^2 (b) $\sqrt{3}\,\ell^2$ (c) $2\sqrt{3}\,\ell$ (d) $4\,\ell^2$

(3) A body of weight 10 newton , is placed on a smooth plane inclines to the horizontal by an angle of measure 30° is kept in equilibrium by a force $\overrightarrow{F}$ in direction of greatest slope upward , then the magnitude of the reaction of the plane on the body = ... newton.

(a) 5   (b) $\frac{5\sqrt{3}}{2}$ (c) $10\sqrt{3}$ (d) $5\sqrt{3}$

(4) If two straight lines are parallel to the third in the space , then they are ....

(a) perpendicular.   (b) intersecting.

(c) parallel.   (d) Not in the same plane.

(5) Two forces of magnitudes $(5\,F + 30)$, $(7\,F + 10)$ newton acting at a point and the resultant bisect the angle between the two forces then F = ... newton

(a) 10   (b) 30   (c) 40   (d) 4

(6) $\overrightarrow{F} = \left(6 , \frac{2\pi}{3}\right)$, then $\|\overrightarrow{F}\|$ = ... unit of forces.

(a) -2 (b) 1   (c) 6   (d) $\frac{2\pi}{3}$

(7) The length of the diameter of the circle : $2x^2 + 2y^2 + 8x - 4y - 8 = 0$ equals ....

(a) 3   (b) 12   (c) 24   (d) 6

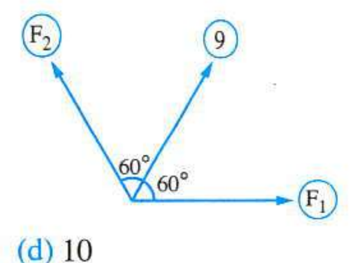
(8) The lateral surface area of a right cone the diameter length of its base = 10 cm. and its height = 12 cm. equals .... cm^2.

(a) 65π (b) 120π (c) 65   (d) 120

(9) If we fold the sector its central angle is θ where $180° > \theta > 0°$ and L is cone drawer , r is radius length of its base cone , then ....

(a) $L > 2r$ (b) $L = 2r$ (c) $L < 2r$ (d) $L < r$

(10) In the opposite figure :



a force of magnitude 9 newton is resolved into two component F_1 and F_2, then F_1 = ... newton.

(a) 4.5 (b) $4.5\sqrt{3}$ (c) 9 (d) 10

(11) The volume of the quadrilateral pyramid , where its base as rhombus of diagonals length 6 cm. , 5 cm. and its height 4 cm. equals .... cm^3.

(a) 40 (b) 25 (c) 30 (d) 20

(12) The circumference of the circle of its equation : $(x-3)^2 + (y+2)^2 = 25$ equals .... length unit.

(a) 2π (b) 3π (c) 10π (d) 25π

(13) $\overrightarrow{F_1} = 4\,\overrightarrow{i} - 3\,\overrightarrow{j}$, $\overrightarrow{F_2}\,(2, -7)$ and $\overrightarrow{F_3} = -\overrightarrow{i} + 22\,\overrightarrow{j}$ and $\overrightarrow{R}$ is their resultant , then $\|\overrightarrow{R}\|$ = ...

(a) 13 (b) 5 (c) 12 (d) 17

(14) The resultant of the two perpendicular forces 6 newton and 8 newton is .... newton

(a) 14 (b) 2 (c) 48 (d) 10

(15) If the ratio between the maximum and minimum value of the resultant of two forces is 3 : 2 , then the ratio between the two forces is ....

(a) 1 : 1 (b) 2 : 3 (c) 5 : 1 (d) 1 : 2

(16) Three forces are equals in magnitude and acting at a point and in equilibrium , then the measure of the angle between any two forces = ...°

(a) 60 (b) 120 (c) 150 (d) 180

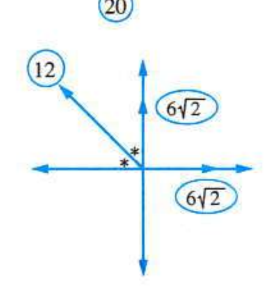
(17) In the opposite figure :

the body is placed on a smooth plane and it is kept in equilibrium by a force acting along the line of greatest slope upward of magnitude 10 , then the measure of θ = ...°

(a) 30 (b) 45

(c) 60 (d) 75

(18) In the opposite figure :



The resultant is in direction of ....

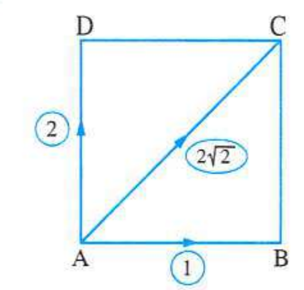
(a) South. (b) East.

(c) West. (d) North.

(19) $\overrightarrow{F_1} = 7\overrightarrow{i} - 4\overrightarrow{j}$, $\overrightarrow{F_2} = k\overrightarrow{i} + 3\overrightarrow{j}$ and $\overrightarrow{F_3} = -9\overrightarrow{i} + m\overrightarrow{j}$ and $\overrightarrow{R}$ is their resultant and $\overrightarrow{R} = \left(5\sqrt{2}, \frac{\pi}{4}\right)$, then $m + k =$ ....

(a) 13 (b) 5 (c) 7 (d) 6

(20) ABCD is a square , then the resultant is ....



(a) $(5, 36^\circ 52')$

(b) $(5, 53^\circ 8')$

(c) $(5, 52^\circ 8')$

(d) $(6, 36^\circ 52')$

Second Essay questions

Answer the following questions :

1 The weight of a body is 200 gm.wt. It is tied by two perpendicular strings their lengths are 60 cm. , 80 cm. and the other ends are fixed on the same horizontal line , find the difference between the tensions in the two strings.

---

2 Determine the position of the circle $C_1 : (x-5)^2 + (y+2)^2 = 4$ with respect to the circle $C_2 : (x+7)^2 + (y-3)^2 = 1$

7 El-Kalyoubia Governorate — Maths Inspection

First Multiple choice questions



Choose the correct answer from the given ones :

(1) The magnitude of two forces are 2 F newton and 6 F newton and its resultant is 8 F newton , then the angle between them is ....°

(a) 0 (b) 60 (c) 90 (d) 180

(2) If $\overrightarrow{R}$ is the resultant of the forces $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$, where $R \in [10, 22]$, $F_1 < F_2$, then $(F_1, F_2) =$ ....

(a) (10 , 22) (b) (6 , 16) (c) (12 , 32) (d) (5 , 11)

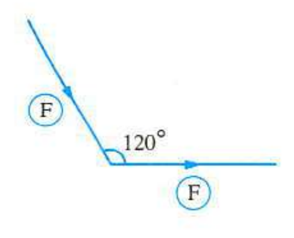
(3) The magnitude of two forces are 7 , F newton and their resultant bisects the angle between them , then F = ... newton.

(a) $7\sqrt{2}$ (b) 3.5 (c) 7 (d) 14

(4) If $\overrightarrow{R}$ is the resultant of the forces $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$ where $\overrightarrow{R} \perp \overrightarrow{F_2}$, then $F_1^2 =$ ....

(a) $R^2 - F_2^2$ (b) $F_2^2 - R^2$ (c) $R^2 + F_2^2$ (d) $R + F_2$

(5) In the opposite figure :



The resultant of two forces F and F is ....

(a) $\frac{1}{2}$ F (b) F

(c) $\sqrt{3}$ F (d) $\sqrt{5}$ F

(6) A force of magnitude 20 newton act in direction 30° north of east is resolved into two perpendicualr components , then the magnitude of its component in direction the east is ....

(a) 10 (b) 20 (c) $10\sqrt{2}$ (d) $10\sqrt{3}$

(7) A body of weight 15 N. is placed on a smooth plane inclines to the horizontal by an angle of measure θ° , the body is kept in equilibrium by a horizontal force of magnitude $15\sqrt{3}$ N. , then θ = ...°

(a) 22.5 (b) 30 (c) 45 (d) 60

(8) If $\overrightarrow{F_1} = 5\,\overrightarrow{i} + 2\,\overrightarrow{j}$, $\overrightarrow{F_2} = a\,\overrightarrow{i} + 6\,\overrightarrow{j}$, $\overrightarrow{F_3} = -14\,\overrightarrow{i} + b\,\overrightarrow{j}$, are three coplanar forces acting at a point and its resultant $\overrightarrow{R} = \left(10\sqrt{2}\,,\frac{3\pi}{4}\right)$, then a + b = ...

(a) – 1 (b) 1 (c) 0 (d) 14

(9) In the opposite figure :

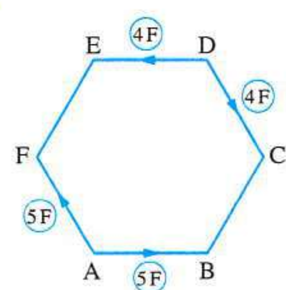
If the horizontal compnent of the force F is 60 newton , then the vertical component is .... newton.

(a) 45 (b) 60 (c) 75 (d) 80

(10) Two forces the difference between their magnitudes 2 and the product of their magnitudes is 48 , and the magnitude of its resultant is $2\sqrt{13}$ newton , then the measure of the angle between their lines of action is ....°

(a) 90 (b) 120 (c) 135 (d) 150

(11) In the opposite figure :

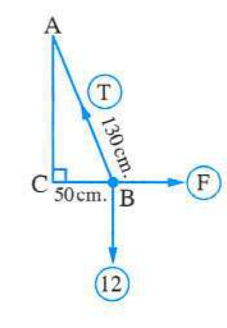


ABCDEF is a regualr hexagon , then the resultant of these forces act in direction ....

(a) $\overrightarrow{AD}$ (b) $\overrightarrow{DA}$

(c) $\overrightarrow{AC}$ (d) $\overrightarrow{EA}$

(12) In the opposite figure :



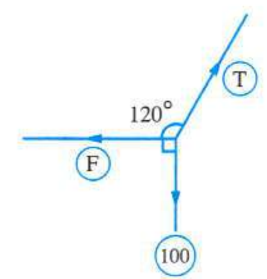
If the body B is in equilibrium

, then $T - F =$ ....

(a) 18 (b) 12

(c) 8 (d) 5

(13) In the opposite figure :



If the forces are in equilibrium

, then $F + T =$ .... N

(a) 300 (b) $300\sqrt{3}$

(c) 100 (d) $100\sqrt{3}$

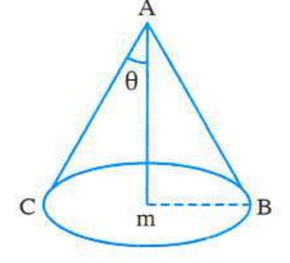
(14) If the points A , B and C represent a plane , then which of the following is always true ?

(a) $AB = BC = CA$ (b) $AB + BC = CA$ (c) $AB + BC > CA$ (d) $AB + BC < CA$

(15) If the total area of triangular pyramid of regular faces $= 36\sqrt{3}$ cm^2 , then the sum of its edges = ... cm.

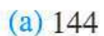
(a) 6 (b) 12 (c) 18 (d) 36

(16) In the opposite figure :



If $\sin\theta = \frac{3}{5}$ and the height of the cone = 12 cm.

, then the total area of the cone = ... π cm^2



(a) 144 (b) 169

(c) 216 (d) 612

(17) The straight line $y = 2$ cuts the circle $(x - 3)^2 + (y - 2)^2 = 25$ in the two points A and B , then AB = ... length unit.

(a) 7 (b) 8 (c) $\sqrt{13}$ (d) 10

(18) The equation $(a - 1)x^2 + 2y^2 + (b - 3)x + (c - 4)y + (d - 5)xy + 2 = 0$ represents a circle its center $(3, -1)$, then $a + b + c + d =$ ....

(a) 17 (b) 11 (c) 7 (d) 5

(19) If the Δ OAB is rotate complete rotation about x-axis where the equation of $\overleftrightarrow{AB}$ is $\frac{x}{4} + \frac{y}{3} = 1$, then the volume of the resultant solid is .... π cm^3

(a) $\frac{16}{3}$ (b) 16 (c) 12 (d) 6

(20) A regular quadrilateral pyramid the area of each of its lateral faces equals the area of its base , and the perimeter of the base is 24 cm. , then the volume of the pyramid = ... cm^3.

(a) 36 (b) $6\sqrt{3}$ (c) $36\sqrt{15}$ (d) $72\sqrt{3}$

Second Essay questions

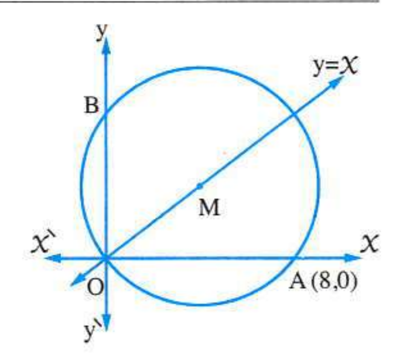
Answer the following questions :

1 The forces of magnitudes F , 6 , $4\sqrt{2}$, $5\sqrt{2}$ and K measured in newton are act at a point in the directions east , north , north west , west south and south respectively. Find the values of F and K if the resultant of forces = 2 newton act in north direction.

2 **In the opposite figure :**

A circle its center M ∈ the straight line y = x

Find the equation of the circle.





8 El-Monofia Governorate

Menouf Eductional Adminisraion
Mathematics Inspection

First Multiple choice questions



Interactive test (8)

Choose the correct answer from the given ones :

(1) Two perpendicular forces of magnitudes 12 newton , 5 newton , act at point , then the magnitude of their resultant ....

(a) 7 (b) 13 (c) 14 (d) 17

(2) Two forces of equal magnitudes , enclosing between them an angle of measure $\frac{\pi}{2}$ if their resultant is 8 newton , then the value of each force is .... newton.

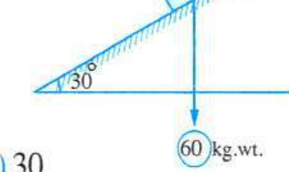
(a) 4 (b) 8 (c) $2\sqrt{2}$ (d) $4\sqrt{2}$

(3) Three forces are equal in magnitude and meeting at a point are in equilibrium , then the measure of the angle between any two of them is ....°

(a) 60 (b) 90 (c) 120 (d) 150

(4) In the opposite figure :

A body of weight 60 kg.wt. is placed on a smooth inclined plane by an angle of measure 30° with the horizontal , then the component in the perpendicular direction on the plane ....

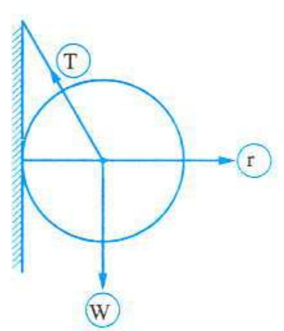


(a) 60 (b) $30\sqrt{3}$ (c) $30\sqrt{2}$ (d) 30

(5) In the opposite figure :

A weight of a magnitude 200 gm.wt. is suspended by two strings of lengths 60 cm. and 80 cm.

, from two points on one horizontal line where the distsnce between them is 100 cm. , then $T_1 - T_2 =$ ....



(a) 160 (b) 120 (c) 80 (d) 40

(6) In the opposite figure :

A solid uniform sphere of weight 15 kg.wt. and radius length 5 cm. is in equilibrium by a string of length 5 cm. attached to a point of its surface and the other end of the string is fixed at a point in the vertical smooth plane above the tangency point

, then $\frac{r}{T} =$ ....

(a) 1 : 2 (b) 1 : 3 (c) $1 : \sqrt{2}$ (d) $1 : \sqrt{3}$

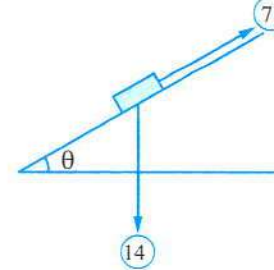
(7) $\overrightarrow{F_1} = \hat{i} - \hat{j}$, $\overrightarrow{F_2} = 2\hat{i} - 3\hat{j}$, then the magnitude of their resultant ....

(a) 12 (b) 7 (c) 5 (d) 4

(8) In the opposite figure :

The body equilibrium on a smooth inclined plane

, then : θ = ...°



(a) 60 (b) 90

(c) 45 (d) 30

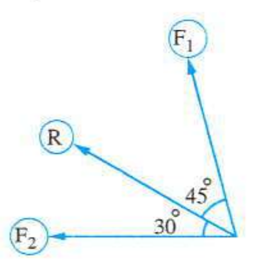
(9) Two forces meeting at a point their magnitudes 5 , 3 newton , then their resultant ∈ ....

(a) [2 , 8] (b)]2 , 8[(c) [2 , 8[(d)]2 , 8]

(10) In the opposite figure :

The resultant R = 12 newton

, then $F_1 =$ ....



(a) 12 cos 75° (b) 12 csc 75°

(c) 6 csc 75° (d) 6 cos 75°

(11) Three coplanar forces meeting at a point are in equilibrium , the magnitude of two forces of them are 3 and 7 newton , then the magnitude of third could be …………… newton.

(a) 2 (b) 3 (c) 5 (d) 11

(12) If three forces meeting at a point and acting up on aparticle are equilibrium , then the magnitude of each force is proportional to the …………… of the included angle between the two other force.

(a) sin. (b) cosin. (c) tangent. (d) cotangent.

(13) Two forces of magnitudes : $3F-1$, $F+5$ newton , if their resultant bisects the angle between them , then the value of $F =$ …………… newton.

(a) 2 (b) 3 (c) 4 (d) 5

(14) A right circular cone , the length of its drawer 10 cm. and its height 8 cm. , then the volume …………… cm^3.

(a) 30π (b) 40π (c) 80π (d) 96π

(15) A triangular pyramid of regular faces , length of its edge is 12 cm. , then its total surface area = …………… cm^2.

(a) 144 (b) $144\sqrt{2}$ (c) $144\sqrt{3}$ (d) $144\sqrt{6}$

(16) All the following cases determine a plane except ……………

(a) A straight line and a point does not belong to it.

(b) Two parallel and not coincident straight lines.

(c) Two intersecting straight lines.

(d) Two skew straight lines.

(17) The point which lies on the circle : $(x-3)^2+(y-4)^2=25$ is ……………

(a) (3 , 4) (b) (3 , 0) (c) (0 , 4) (d) (0 , 0)

(18) A regular quadrilateral pyramid the perimeter of it base = 40 cm. and it height 12 cm. , then lateral surface area = …………… cm^2.

(a) 200 (b) 240 (c) 260 (d) 320

(19) The solid formed from the rotation of a right-angle triangle a complete rotation about one of its right sides as an axis is called ……………

(a) cube. (b) pyramide. (c) cone. (d) cuboid.

(20) The circumference of the circle whose equation : $(x-3)^2+(y+2)^2=25$ is ……………

(a) 5π (b) 10π (c) 15π (d) 25π

Second Essay questions

Answer the following questions :

1 ABCDHE is a regular hexagon. Forces of magnitudes 2 , $4\sqrt{3}$, 8 , $2\sqrt{3}$ and 4 kg.wt. act at point A in directions $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$, $\overrightarrow{AH}$, $\overrightarrow{AE}$ respectively. Find the magnitude and the direction of their resultant.

---

2 **Find the equation of the circle which the straight line :** $3x + 4y + 23 = 0$ touches it and its centre is (1 , 1).

9 El-Dakahlia Governorate — Maths Supervision

First Multiple choice questions


Interactive test 9

Choose the correct answer from the given ones :

(1) The volume of the right cone is 27π cm^3 and the circumference of its base is 6π cm. , then its height is .... cm.

(a) 27 (b) 18 (c) 9 (d) 6

(2) Right circular cone , area of its base = 25π cm^2 , length of its drawer = 13 cm. , then its lateral area = ... cm^2

(a) 50π (b) 65π (c) 90π (d) 100π

(3) Two forces of magnitudes $8\sqrt{3}$ and 8 newton act at a point the angle between them of measure 150° , then the magnitude of the resultant of the two forces = ... newton.

(a) 64 (b) 32 (c) 16 (d) 8

(4) A ball of pendulum of weight 600 dyne is in equilibrium when the string makes an angle of measure 30° with the vertical under the effect of a force perpendicular to the string , then the magnitude of the force = ... dyne.

(a) 1200 (b) 300 (c) $300\sqrt{2}$ (d) $300\sqrt{3}$

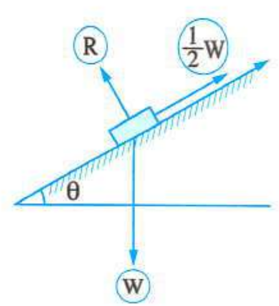
(5) Force of magnitude $4\sqrt{2}$ acts in east direction it was resolved into two perpendicular component , then the magnitude of the component in direction of eastern north equals .... newton.

(a) 4 (b) $4\sqrt{2}$ (c) 8 (d) $8\sqrt{2}$

(6) If the equation of a circle is $(2a+1)x^2 + (a+2)y^2 + (b-1)xy - 6ax + 12by - 12 = 0$, then its radius length equals .... length unit.

(a) 3 (b) 4 (c) 5 (d) 6

(7) In the opposite figure :



If the body is in equilibrium under acting forces , then m (∠ θ) = ...

(a) 30° (b) 15°

(c) 60° (d) 45°

(8) A uniform smooth sphere of weight 1.5 gm.wt. and radius length 25 cm. is suspended at a point on its surface by a light string of length 25 cm. and the other end of the string is fixed at a point in vertical smooth wall , if the sphere is in equilibrium , then the tension in the string = ... gm.wt.

(a) $2\sqrt{2}$ (b) $\sqrt{3}$ (c) 3 (d) 6

(9) If the resultant of two forces acting on point is zero , then the angle between them = ...

(a) 180° (b) 0° (c) 45° (d) 90°

(10) If a force of magnitude (F) is in equilibrium with two forces of magnitudes 5 and 3 netwon and the measure of the angle between them is 60° , then F = ... newton.

(a) $\sqrt{19}$ (b) $\sqrt{34}$ (c) 7 (d) 15

(11) The equation of the circle which is the image of the circle : $x^2 + y^2 - 12x + 6y + 20 = 0$ by translation $(x + 2 , y - 2)$

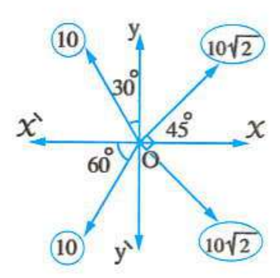
(a) $x^2 + y^2 - 10x + 4y + 20 = 0$ (b) $x^2 + y^2 - 16x + 10y + 20 = 0$

(c) $(x - 8)^2 + (y + 5)^2 = 25$ (d) $(x - 6)^2 + (y + 3)^2 = 20$

(12) Two forces F , F act at a particle and the magnitude of their resultant is F , then the measure of the included angle between the two forces = ...

(a) 60° (b) 45° (c) 120° (d) 135°

(13) In the opposite figure :



The resultant of the system of forces R = ... newton.

(a) 20 (b) $10\sqrt{2}$

(c) 10 (d) zero

(14) Three coplanar forces intersecting at one point and in equilibrium. If 3 N. and 7 N. are magnitudes of two forces of them , then the magnitude of the third force could be equals .... N.

(a) 11 (b) 2 (c) 5 (d) 3

(15) The force $\overrightarrow{R}$ is resolved into two forces $\overrightarrow{F_1}$, $\overrightarrow{F_2}$ which make with the force $\overrightarrow{R}$ two angles of measure θ_1 , θ_2 from two sides respectively , then the magnitude of $\overrightarrow{F_1}$ = ...

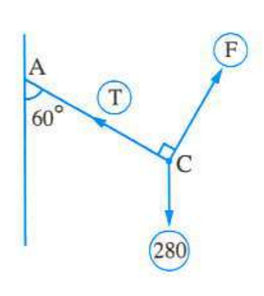
(a) $\frac{R \sin \theta_1}{\sin(\theta_1 + \theta_2)}$ (b) $\frac{R \sin \theta_2}{\sin(\theta_1 - \theta_2)}$ (c) $\frac{R \sin(\theta_1 + \theta_2)}{\sin \theta_2}$ (d) $\frac{R \sin \theta_2}{\sin(\theta_1 + \theta_2)}$

(16) Two perpendicular forces of magnitudes 6 N. , 8 N. , then the sine of angle between the resultant and first force = ...

(a) $\frac{3}{5}$ (b) $\frac{4}{5}$ (c) $\frac{3}{4}$ (d) $\frac{4}{3}$

(17) In the opposite figure :

A lamp of weight 280 gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T}$ = ...



(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

(18) The center of the circle : $x^2 + y^2 - 6x + 8y = 0$ is the point ....

(a) (3 , – 4) (b) (4 , – 3) (c) (– 4 , 3) (d) (– 3 , 4)

(19) The lateral surface area of the right cone whose base radius is 6 cm. and the height of the cone is 8 cm. equals = ... cm^2

(a) 28π (b) 10π (c) 60π (d) 48π

(20) The number of planes that could be passes through three non-collinear points is ....

(a) 1 (b) 2 (c) 3 (d) 4

Second Essay questions

Answer the following questions :

1 A metal sphere of weight 400 kg.wt acts in its centre , placed between two smooth planes , one of them is vertical and the other inclined at angle of measure 60° with vertical , then find the reaction of each plane.

---

2 A regular quadrilateral pyramid , the side length of its base is 18 cm. , if its volume is 1296 cm^3. Find the slant height and lateral surface area.

10 **Damietta Governorate**  Maths Inspection

First Multiple choice questions


Interactive test ⑩

Choose the correct answer from the given ones :

(1) The resultant of two forces 6 newton and 8 newton could be .... newton.

(a) 20 (b) 15 (c) 12 (d) 1

(2) Two forces of equal magnitudes , enclosing between them an angle of measure $\frac{\pi}{2}$ if the magnitude of their resultant 8 newton , then the value of each force measured in newton is ....

(a) $2\sqrt{2}$ (b) 4 (c) $4\sqrt{2}$ (d) 8

(3) All different vertical straight lines in the space are ....

(a) parallel. (b) skew.

(c) contained in the same plane. (d) intersecting.

(4) Two forces of magnitudes 3 , F newton and the measure of the angle between them is 120°. If their resultant is perpendicular to the first force , so the value of F in newton is ....

(a) 1.5 (b) 3 (c) $3\sqrt{3}$ (d) 6

(5) The magnitude of two perpendicular forces are (2 F – 5) and (F + 2) newton and the magnitude of their resultant is $3\sqrt{5}$ newton , then F = ... newton.

(a) 7 (b) 4 (c) 6 (d) 3

(6) A regular quadrilateral pyramid whose volume is 480 cm^3. , and its base length is 12 cm. , then the length of its height = ... cm.

(a) 10 (b) 20 (c) 30 (d) 15

(7) Two forces of magnitudes 3 F and F newton and their resultant is 4 F newton , then the measure of the angle between them = ...°

(a) 60 (b) 0 (c) 180 (d) 90

(8) Two forces of magnitudes 4 and 6 newton the measure of the angle between them is 90° , then the tangent of the angle between the resultant and the first force equal ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $2\sqrt{13}$ (d) $\frac{\sqrt{6}}{2}$

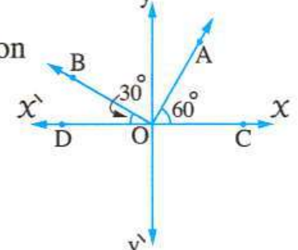
(9) If a body of weight (W) is placed on an inclined smooth plane makes an angle of measure (θ) with the vertical , then its weight component in direction of the plane is ....

(a) $W \sin \theta$ (b) $W \cos \theta$ (c) W (d) $W \tan \theta$

(10) The height of a right circular cone is 6 cm. and the circumference of its base is 16π cm. , then its lateral area = ... cm^2

(a) 144π (b) 64π (c) 60π (d) 80π

(11) **In the opposite figure :**



The magnitude of four coplanar forces are 1 , 2 , $4\sqrt{3}$, $3\sqrt{3}$ newton act at point O in the direction of $\overrightarrow{OX}$, $\overrightarrow{OA}$, $\overrightarrow{OB}$ and $\overrightarrow{Oy}$, m ∠ (AOC) = 60° , m ∠ (BOD) = 30° , then magnitude and the direction of the resultant of the forces is ....

(a) (4 , 180°) (b) (4 , 0°) (c) (3 , 0°) (d) (5 , 90°)

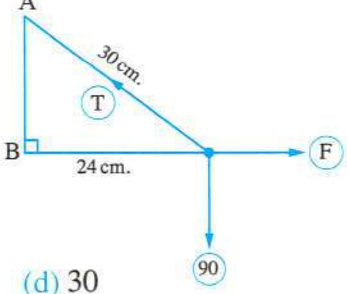
(12) If a body is kept in equilibrium under action of severel forces , then the least number of forces could cause equilibrium equals ....

(a) 1 (b) 2 (c) 3 (d) 4

(13) If the equation : $2x^2 + a y^2 + b x y - 5 = 0$ represents a circle , then its area = ... square unit.

(a) 5π (b) $\sqrt{5}\pi$ (c) $\frac{5}{2}\pi$ (d) $5\sqrt{2}\pi$

(14) **In the opposite figure :**



A body of weight 90 gm.wt. is attached to the end of a string of 30 cm. long. The body is pulled by horizontal force. It comes to equilibrium when it is 24 cm. apart from the wall $\overline{AB}$, then T – F = ... gm.wt.

(a) 150 (b) 120 (c) 50 (d) 30

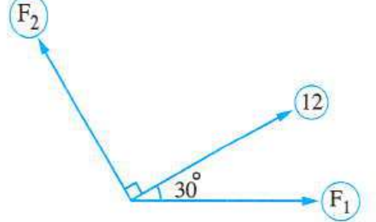
(15) Two forces of magnitudes 5 , 3 newton and the measure of the angle enclosed between them is 60° , then the magnitude of their resultant R equals ....

(a) 2 (b) 5 (c) 7 (d) 8

(16) If the circle whose equation : $x^2 + y^2 - 6x + 8y + c = 0$ touches y-axis , then c = ...

(a) – 9 (b) 9 (c) 16 (d) – 16

(17) The force of magnitude 12 newton is resolved into two components $\overrightarrow{F_1}$, $\overrightarrow{F_2}$ make angles of measures 30° , 90° with it , then F_2 = ... newton.



(a) 10 (b) $10\sqrt{3}$
(c) $6\sqrt{3}$ (d) $4\sqrt{3}$

(18) The radius length of the base of a right circular cone = 5 cm. and its total surface area = 90 π cm.^{2} , then its volume = ... cm.^{3}

(a) 105 π (b) 95 π (c) 100 π (d) 120 π

(19) If $\overrightarrow{F_1} = (2 , -2)$, $\overrightarrow{F_2} = (4 , -8)$ and their resultant $\overrightarrow{R} = (2a , -3b)$, then a + b = ...

(a) 3 (b) $\frac{10}{3}$ (c) $6\frac{1}{3}$ (d) 12

(20) The general form of the equation of a circle its centre is (5 , – 4) and touches X-axis is ....

(a) $X^2 + y^2 - 10X + 8y + 25 = 0$ (b) $X^2 + y^2 - 5X + 4y = 0$
(c) $X^2 + y^2 - 10X + 8y = 25$ (d) $X^2 + y^2 + 10X - 8y + 25 = 0$

Second Essay questions

Answer the following questions :

1 A regular quadrilateral pyramid the length of its base is 20 cm. , and its height is $10\sqrt{3}$ cm.
Find : Its lateral surface area

---

2 A body of weight 20 kg.wt. is placed on a smooth plane inclined to the horziontal with an angle of measure θ where cos θ = $\frac{4}{5}$ the body of kept in equilibrium by a horizontal force of magnitude F. **Find :** F and the reaction of the plane.

11 El-Beheira Governorate  Maths Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) If A , B and C are three points determine a plane , then ....

(a) AB = BC = AC (b) AB + BC = AC
(c) AB + BC > AC (d) AB + BC < AC

(2) A triangular regular faces pyramid , its edge length 10 cm.
, then its total area = ... cm^2

(a) 40 (b) 100 (c) $100\sqrt{3}$ (d) $25\sqrt{3}$

(3) A regular quadrilateral pyramid , the area of its base = 100 cm^2 , and its height 12 cm.
, then its lateral area equal .... cm^2

(a) 260 (b) 520 (c) 130 (d) 360

(4) A regular quadrilateral pyramid whose total area = 70 cm^2 , and its lateral area = 45 cm^2
, then its height = ... cm.

(a) 2.5 (b) 5 (c) $\sqrt{14}$ (d) 4.5

(5) The volume of a right circular cone is 9π cm^3 , and the length of its base radius equal the length of its height , then its base area = ... cm^2

(a) 9π (b) 3π (c) 27π (d) 12π

(6) The diameter length of the circle : $4x^2 + 4y^2 + 16x - 8y - 16 = 0$, is .... length unit.

(a) 3 (b) 6 (c) 12 (d) 24

(7) The point (2 , 3) lies .... the circle $x^2 + y^2 = 9$

(a) on (b) inside (c) outside (d) in the center

(8) The magnitude of two forces F , 2 newton and the measure of their included angle = $\frac{2\pi}{3}$
, the magnitude of their resultant is F newton , then F = ... newton.

(a) 2 (b) 3 (c) 4 (d) $2\sqrt{2}$

(9) The magnitude of two forces 2 F , 5 F newton , and the measure of their included angle is θ and their resultant is 3 F , then θ = ...°

(a) zero (b) 60 (c) 90 (d) 180

(10) A force of magnitude 40 newton acts vertically upwards is resolved into two components , one of them is horizontal of magnitude 20 newton , then the magnitude of the other = ... newton.

(a) 20 (b) $20\sqrt{3}$ (c) $20\sqrt{5}$ (d) $10\sqrt{3}$

(11) In the opposite figure :

If a body of weight 10 newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° , then the components of the weight in direction of line of the greatest slope downward = ... newton.

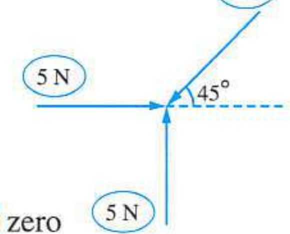
30°
10

(a) $5\sqrt{2}$ (b) $5\sqrt{3}$ (c) 5 (d) $10\sqrt{5}$

(12) Three coplanar forces $\overrightarrow{F_1} = 6\,\overrightarrow{i} + 7\,\overrightarrow{j}$, $\overrightarrow{F_2} = a\,\overrightarrow{i} - 9\,\overrightarrow{j}$, $\overrightarrow{F_3} = 5\,\overrightarrow{i} + b\,\overrightarrow{j}$ act at a particle and they are in equilibrium , then $a + 2\,b =$ ....

(a) -9 (b) 5 (c) 7 (d) -7

(13) In the opposite figure :



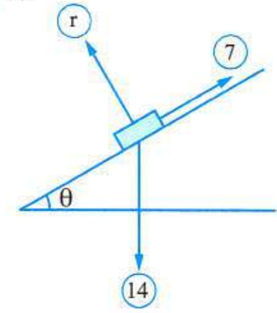
Some forces meeting at a point , then the magnitude of the resultant of these forces = ... newton.

(a) $15\sqrt{2}$ (b) 5 (c) $5\sqrt{2} - 5$ (d) zero

(14) Three coplanar forces of magnitudes 60 , 88 and 60 gm.wt. , act at a point , the first is toward north , the second is in the direction 30° south of west and the third in the direction 30° south of east , then the magnitude of the resultant of these forces is .... gm.wt.

(a) 28 (b) 24 (c) 30 (d) 60

(15) In the opposite figure :



If the body is in equilibrium when it is placed on an inclined smooth plane , then m (∠ θ) = ...°

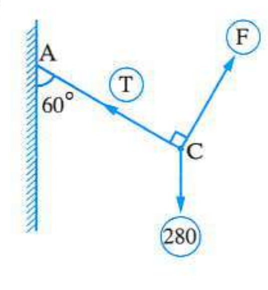
(a) 60 (b) 30

(c) 45 (d) 75

(16) Three coplanar forces not on the same straight line meeting at a point are in equilibrium , the magnitude of two forces of them are 7 and 3 newton , then the magnitude of the third could be .... newton.

(a) 10 (b) 4 (c) 5 (d) 3

(17) In the opposite figure :



A lamp of weight 280 gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T} =$ ....

(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

(18) A uniform rod of weight 20 newton which is movable around a hinge at one of its ends is pulled a side by a horizontal force of magnitude 10 newton acting on the other end , then the measure of the angle of inclination of the rod to the vertical when it is in equilibrium = ...°

(a) 60 (b) 45 (c) 30 (d) 90

(19) A metallic sphere of weight 15 gm.wt. is put such that it touches two smooth planes , one of them is vertical and the other inclines to the vertical by an angle of measure 30° , then the reaction on the vertical plane = ... newton.

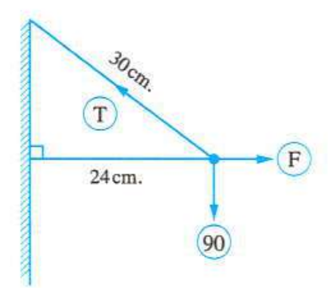
(a) $15\sqrt{3}$ (b) 30 (c) 15 (d) $30\sqrt{3}$

(20) **In the oppostie figure :**

T – F = ... gm.wt.

(a) 150 (b) 30

(c) 50 (d) 120



Second Essay questions

Answer the following questions :

1 A smooth sphere of weight 20 newton is on a smooth vertical wall and suspended by a light string from a point on its surface. The other end of the string is attached to a point on the wall above the point of contact between the wall and the sphere. If the length of the string equal the diameter of the sphere. Find the pressure on the wall and the tention in the string in case of equilibrium.

---

2 ABC is an equilateral triangle , its side length 6 cm. , if the triangle is rotated a complete rotation around BC. Find the volume of the solid which formed from the rotation in terms of π

12 Beni-Suef Governorate



Maths Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) If the magnitude of the resultant of two forces act at a point is maximum value , then the measure of the angle between their line of actions equals ....

(a) 0° (b) 60° (c) 120° (d) 180°

(2) Two forces act at a point the magnitude of the two forces are 6 , 3 newton and their resultant is perpendicular to one of them , then the magnitude of their resultant = ... newton.

(a) 3 (b) $3\sqrt{3}$ (c) 6 (d) $6\sqrt{3}$

(3) Two forces of magnitudes 8 and F gm.wt. the measure of the angle between them is $\theta \in]0, \pi[$, their resultant bisects the included angle between them, then F = ... gm.wt.

(a) 4 (b) $2\sqrt{2}$ (c) 8 (d) 16

(4) Two forces of magnitudes 4 and 6 newton act at a point, the measure of the angle between them is 90°, then the tangent of the angle between the resultant and the first force equlas ....

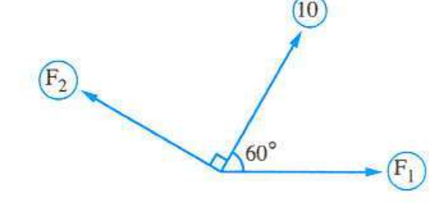
(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $2\sqrt{13}$ (d) $\frac{\sqrt{6}}{2}$

(5) The magnitude of a force is 6 newton and acts towards the North. It is resolved into two perpendicular components, then its component in direction of Eastern North is of magnitude .... newton.

(a) zero (b) 6 (c) $3\sqrt{2}$ (d) $2\sqrt{3}$

(6) **In the opposite figure :**

If the force of magnitude 10 newton is resolved into two components $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$ inclined to the force by two angles of measures 60° and 90° respectively, then F_2 = ... newton.



(a) $5\sqrt{3}$ (b) 10 (c) $10\sqrt{3}$ (d) 20

(7) If a body of weight 10 newton is placed on a smooth plane incliend to the horizontal at an angle of measure 30°, then the component of the weight in direction of line of the greatest slope downward = ... newton.

(a) $5\sqrt{2}$ (b) 5 (c) $5\sqrt{3}$ (d) $10\sqrt{3}$

(8) If $\overrightarrow{F_1} = \overrightarrow{i} - \overrightarrow{j}$, $\overrightarrow{F_2} = 2\overrightarrow{i} - 4\overrightarrow{j}$, their resultant $\overrightarrow{R} = 2a\overrightarrow{i} - 3b\overrightarrow{j}$, then a + b = ...

(a) 3 (b) $3\frac{1}{3}$ (c) $3\frac{1}{6}$ (d) 12

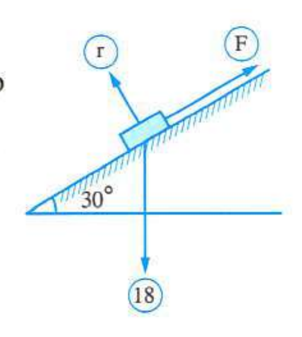
(9) If $\overrightarrow{F_1} = 5\overrightarrow{i}$, $\overrightarrow{F_2} = 7\overrightarrow{i} - 5\overrightarrow{j}$, $\overrightarrow{R}$ is their resultant, then $\|\overrightarrow{R}\|$ = ... force unit.

(a) 13 (b) $\sqrt{5} + \sqrt{74}$ (c) 49 (d) $\sqrt{12} - \sqrt{5}$

(10) If $\overrightarrow{F}$ is in equilibrium with two forces of magnitudes 5 and 3 newton and the measure of the angle between them is 60°, then F = ... newton.

(a) $\sqrt{19}$ (b) $\sqrt{34}$ (c) 7 (d) 15

(11) In the opposite figure :

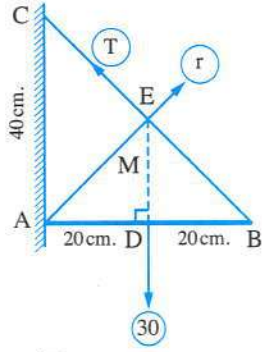


A body of weigth 18 newton is placed on a smooth plane inclined to the horizontal by an angle of measure 30° , it is kept in equilibrium by a force of magnitude F newton in the direction of the plane upward , then F + r = …………… newton.

(a) $6\sqrt{3}$ (b) $9\sqrt{3}$

(c) $18\sqrt{3}$ (d) $9 + 9\sqrt{3}$

(12) In the opposite figure :

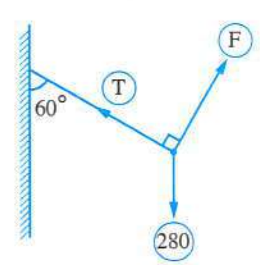


$\overline{AB}$ is a uniform rod with length 40 cm. and weight 30 newton is connected to a hinge at A if the rod kept in equilibrium horizontally by a light string connected to the rod at B and C where C is located on the wall just above A , AC = 40 cm.

, then the reaction of the hinge r = …………… newton.

(a) 20 (b) $15\sqrt{2}$ (c) 30 (d) $40\sqrt{2}$

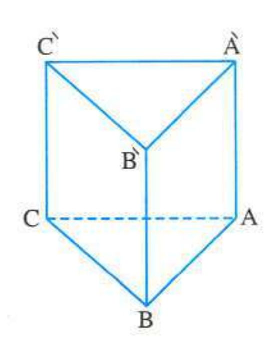
(13) In the opposite figure :



A lamp of weight 280 gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T}$ = ……………

(a) $\frac{1}{\sqrt{3}}$ (b) $\frac{1}{2}$ (c) $\sqrt{3}$ (d) 2

(14) In the opposite figure :



The plane ABC ∩ the plane ÀB̀C̀ = ……………

(a) $\overleftrightarrow{B\grave{B}}$

(b) ∅

(c) $\overleftrightarrow{\grave{A}\grave{B}}$

(d) $\overleftrightarrow{\grave{A}A}$

(15) Number of planes that are passing through three non-collinear points is ……………

(a) 1 (b) 2 (c) 3 (d) an infinite number

(16) A regular quadrilateral pyramid whose volume is 480 cm^3 and its base length is 12 cm. , then the length of its height = ... cm.

(a) 10 (b) 15 (c) 20 (d) 30

(17) A triangular regular faces pyramid , its edge length 10 cm. , then its total area equal .... cm^2

(a) 40 (b) 100 (c) $100\sqrt{3}$ (d) $25\sqrt{3}$

(18) The center of the circle whose equation : $x^2 + y^2 - 6x + 8y = 0$ is the point ....

(a) (3 , – 4) (b) (4 , – 3) (c) (– 3 , 4) (d) (– 4 , 3)

(19) Which of the following points does lie on the circle whose equation : $(x-2)^2 + y^2 = 13$?

(a) (2 , 3) (b) (3 , – 2) (c) (2 , 5) (d) (4 , 3)

(20) The equation of the circle whose center (4 , 3) and touches x-axis is ....

(a) $(x-3)^2 + (y-4)^2 = 16$ (b) $(x-4)^2 + (y-3)^2 = 9$

(c) $(x+3)^2 + (y+4)^2 = 9$ (d) $(x+3)^2 + (y-4)^2 = 16$

Second Essay questions

Answer the following questions :

1 ABCDEF is a regular hexagon , the forces of magnitudes 6 , $2\sqrt{3}$, 6 , $2\sqrt{3}$ newton act on $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ and $\overrightarrow{AE}$ respectively. Find the magnitude of the resultant of these forces.

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2 Find to the nearest tenth , the total area of the right circular cone in which the diameter length of its base is 10 cm. and its height is 12 cm.

13 El-Menia Governorate



Maths Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The case that doesn't determine a plane is ....

(a) two intersecting straight lines. (b) two different parallel straight lines.

(c) three points not collinear. (d) straight line and point on it.

(2) Two forces of magnitudes 8 , F newton , the angle between them $\theta \in]0 , \pi[$ their resultant bisects the angle between them , then F = ... newton.

(a) 4 (b) 8 (c) 16 (d) $2\sqrt{3}$

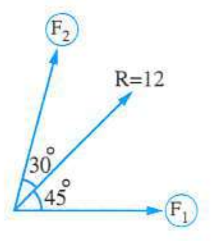
(3) If the circle whose equation : $x^2 + y^2 - 6x + 8y + c = 0$ touches x-axis , then c = ...

(a) 6 (b) – 6 (c) 9 (d) – 9

(4) If θ is the measure of the angle between two forces of magnitudes 2 N , 6 N and R is the resultant between them by newton where $4 \le R < 8$, then angle between them ∈ ....

(a) $[0 , \pi[$ (b) $]0 , \pi]$ (c) $[\frac{\pi}{2} , \pi]$ (d) $]0 , \pi[$

(5) In the opposite figure :



R = 12 newton

, then F_1 = ... newton.

(a) 12 cos 45° (b) 12 sin 45°

(c) 6 csc 45° (d) 6 csc 75°

(6) Two forces of magnitudes 12 N , 15 N acting at a point and angle between them θ° where $\cos \theta° = \frac{-4}{5}$, then the angle between resultant and first force = ...

(a) zero (b) 30° (c) 60° (d) 90°

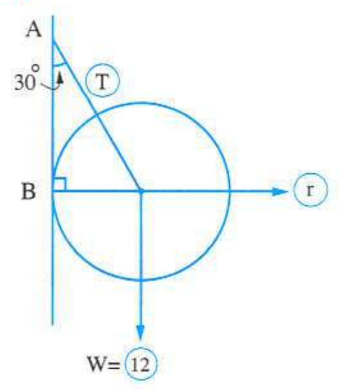
(7) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three forces intersect at a point and equilibrium where $\overrightarrow{F_1} = (2 , -5)$, $\overrightarrow{F_2} = (-3 , 2)$, then $\overrightarrow{F_3}$ = ...

(a) (– 1 , – 3) (b) (1 , 3) (c) (– 6 , – 10) (d) (6 , 10)

(8) If $\overrightarrow{F_1} = 3\hat{i} - 2\hat{j}$, $\overrightarrow{F_2} = a\hat{i} - \hat{j}$, $\overrightarrow{F_3} = 4\hat{i} - b\hat{j}$, and the resultant $\overrightarrow{R} = 6\hat{i} - 4\hat{j}$, then (a , b) = ...

(a) (1 , – 1) (b) (– 1 , 1) (c) (– 1 , – 1) (d) (1 , 1)

(9) In the opposite figure :



If the sphere is in equilibrium

, then (T , r) = ... newton.

(a) (4 , 8) (b) (12 , 8)

(c) $\left(4\sqrt{3} , 8\sqrt{3}\right)$ (d) $\left(8\sqrt{3} , 4\sqrt{3}\right)$

(10) The volume of triangular regular faces pyramid its edge length 6 cm. = ... cm^3

(a) $18\sqrt{2}$ (b) $54\sqrt{2}$ (c) $27\sqrt{3}$ (d) $36\sqrt{3}$

(11) A right circular cone the length of its drawer 25 cm. and its lateral area 550 cm^2 , then its volume = ... cm^3 $\left(\pi = \frac{22}{7}\right)$

(a) 1223 (b) 1232 (c) 1322 (d) 3122

(12) In the opposite figure :

A body its weight 200 N is hanged by two strings , then the magnitude of the tension in the two strings = ... N

(a) 120 , 160 (b) 180 , 12 (c) 150 , 160 (d) 100 , 130

(13) If the length of the radius of right circular cone 3 cm. and its height 4 cm. , then its total area = ... cm^2

(a) 9π (b) 10π (c) 21π (d) 24π

(14) Three coplanar forces of magnitude 5 , 6 , 7 newton act at a particle if the forces are in equilibrium , then the cosine of the angle between the second and the third force = ...

(a) $\frac{7}{5}$ (b) $\frac{-5}{7}$ (c) $\frac{15}{17}$ (d) $\frac{1}{2}$

(15) The point that lies on the circle : $(X + 2)^2 + y^2 = 13$ from the following is ....

(a) $(-2 , 0)$ (b) $(0 , -2)$ (c) $(1 , 2)$ (d) $(-1 , -2)$

(16) Any four points don't lie in one plane determine ....

(a) one plane. (b) two planes. (c) three planes. (d) four planes.

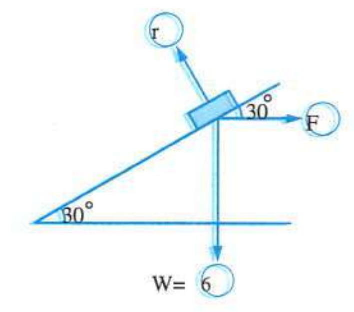
(17) Three coplanar forces not on the same straight line meeting at a point are in Equilibrium the magnitudes of them are 4 , 8 , F , then F could be .... N

(a) 3 (b) 4 (c) 8 (d) 13

(18) A body of weight 6 newton is placed on smooth plane inclined to the horizontal at an angle 30° it kept in equilibrium by horizontal force of magnitude F , then F = ... newton.

(a) $2\sqrt{3}$ (b) $3\sqrt{3}$ (c) $4\sqrt{3}$ (d) $6\sqrt{3}$

(19) In the opposite figure :



r = ...

(a) $2\sqrt{3}$ (b) $3\sqrt{3}$

(c) $4\sqrt{3}$ (d) $6\sqrt{3}$

(20) In the previous figure :

The component of the weight in the direction of the greatest slope to the bottom = ... N

(a) 3 (b) $3\sqrt{3}$ (c) $4\sqrt{3}$ (d) $6\sqrt{3}$

Second Essay questions

Answer the following questions :

1 Regular quadrilateral pyramid , the length of its base side is 10 cm. , and area of one of its lateral faces is 60 cm^2. **Find :** Its total area.

---

2 **In the opposite figure :**

ABCDEF is a regular hexagon , forces of magnitudes 6 , $2\sqrt{3}$, 6 , $2\sqrt{3}$ newton act along $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ and $\overrightarrow{AE}$ respectively

Find their resultant.

14 Assiut Governorate



Maths Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) Two forces of equal magnitudes enclosing between them an angle of measure $\frac{\pi}{2}$ if the magnitude of their resultant is 8 newton , then the value of each force is .... newton.

(a) $2\sqrt{2}$ (b) 4 (c) $4\sqrt{2}$ (d) 8

(2) A force of magnitude $10\sqrt{2}$ gm.wt. acts in the Eastern South direction , is resolved into two perpendicular components , then the magnitude of the component in the south direction = ... gm.wt.

(a) 5 (b) 10 (c) $10\sqrt{2}$ (d) $5\sqrt{2}$

(3) If $\overrightarrow{F_1} = 4\overrightarrow{i}$, $\overrightarrow{F_2} = 8\overrightarrow{i} - \overrightarrow{j}$, $\overrightarrow{F_3} = 4\overrightarrow{i} - 5\overrightarrow{j}$, then $\|\overrightarrow{R}\| =$ .... force unit.

(a) 12 (b) 5 (c) 13 (d) $2\sqrt{73}$

(4) Two forces act at a point the magnitude of the two forces $8\sqrt{3}$, 8 newton and the measure of the included angle between them 150° , then the magnitude of their resultant = ... newton.

(a) 64 (b) 32 (c) 16 (d) 8

(5) Two forces of magnitudes F , 2 F newton act at a point if their resultant is perpendicular to one of them , then R = ...

(a) $\sqrt{5}$ F (b) $\sqrt{3}$ F (c) 3 F (d) F

(6) The magnitude of a force is 8 newton and acts in East direction. It is resolved into two components , the angle between the two components is 120° , then its component in south direction = ... newton.

(a) 16 (b) 8 (c) $8\sqrt{3}$ (d) $\frac{8\sqrt{3}}{3}$

(7) The resultant of two forces of magnitudes 6 newton and 8 newton could be .... newton.

(a) 20 (b) 15 (c) 12 (d) 1

(8) The magnitude of the resultant of the two forces shown in the opposite figure is ....

(a) $\frac{1}{2}$ F (b) F

(c) $\sqrt{3}$ F (d) $\sqrt{5}$ F

F
60°
F

(9) The magnitude of the resultant of two forces act at a point is maximum value , then the measure of the angle between the two forces equal ....

(a) 180° (b) 120° (c) zero (d) 60°

(10) Three equal forces in magnitude meeting at a point and they are in equilibrium , then the measure of the angle between each two forces is ....

(a) 60° (b) 90° (c) 120° (d) 150°

(11) The least number of coplanar unequal in magnitude forces could be in equilibrium is ....

(a) 1 (b) 2 (c) 3 (d) 4

(12) The weight of a body is 20 kg.wt. it is placed on a smooth inclined plane makes an angle of measure θ to the horizontal , where $\sin\theta = \frac{3}{5}$ and it prevent from sliding by a horizontal force F , then F = ... kg.wt.

(a) 30 (b) 15 (c) 10 (d) $5\sqrt{3}$

(13) Number of planes that are passing through three non-collinear points is ....

(a) 1 (b) 2 (c) 3 (d) an infinite number.

(14) A regular quadrilateral pyramid whose volume is 480 cm^3 and its base length is 12 cm. , then the length of its height = ... cm.

(a) 10 (b) 20 (c) 30 (d) 15

(15) The right circular cone is generated by folding a paper in the shape of ....

(a) an equilateral triangle. (b) a circular segment.

(c) a right-angled triangle. (d) a circular sector.

(16) The radius length of the base of a right circular cone where its total area 616π cm^2 and the length of its drawer is 30 cm. is .... cm.

(a) 44 (b) 14 (c) 30 (d) 34

(17) The radius length of the circle whose equation : $x^2 + y^2 - 4x + 2y - 4 = 0$ is .... length unit.

(a) 2 (b) 3 (c) 4 (d) 9

(18) The circumference of the circle whose equation : $(x - 3)^2 + (y + 2)^2 = 25$ equal .... length unit.

(a) 2π (b) 3π (c) 10π (d) 25π

(19) The measure of the smallest rotation angle of an isosceles triangle around its axis of symmetry to form a right circular cone is ....

(a) 90° (b) 180° (c) 270° (d) 60°

(20) The point which lies on the circle : $(x - 2)^2 + y^2 = 13$ is ....

(a) (2 , 3) (b) (3 , – 2) (c) (2 , 0) (d) (4 , 3)

Second Essay questions

Answer the following questions :

1 Two forces of magnitude 2 and F newton , the angle between them is of measure 120° find F if the resultant is perpendicular to the second force.

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2 Four coplanar forces act on a particle the first of magnitude 4 newton act in the East direction , the second of magnitude 2 newton acts in direction 60° North of the East , the third of magnitude 5 newton acts in the direction 60° North of the West and the fourth of magnitude $3\sqrt{3}$ newton acts in direction 60° West of the South find the magnitude of the resultant and its direction.

15 Qena Governorate



Maths Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The circle which equation : $x^2 + y^2 = 25$ its center ....

(a) (0 , 0) (b) (5 , 5) (c) (0 , 1) (d) (1 , 0)

(2) A regular quadrilateral pyramid its height 4 cm. , and its slant height 5 cm. , then length side of its base .... cm.

(a) 5 (b) 3 (c) 4 (d) 6

(3) Two forces F , 16 newton act on a particle if their resultant 26 newton and angle between their directions 120° , then F = ... newton.

(a) 30 (b) 41 (c) 16 (d) 26

(4) If $\overrightarrow{F_1}$, $\overrightarrow{F_2}$, $\overrightarrow{F_3}$ are three forces meeting at a point they are in equilibrium , then magnitude of resultant of the two forces $\overrightarrow{F_1}$, $\overrightarrow{F_2}$ is the magnitude of ....

(a) $\overrightarrow{F_1}$ (b) $\overrightarrow{F_1} + \overrightarrow{F_2}$ (c) 0 (d) $\overrightarrow{F_3}$

(5) Two straight lines L_1 , L_2 are parallel if ....

(a) $L_1 \cap L_2 = \varnothing$

(b) L_1 , L_2 lie in the same plane.

(c) $L_1 \cap L_2 = \varnothing$ and L_1 , L_2 lie in the same plane.

(d) $L_1 \cap L_2 = \varnothing$ and L_1 , L_2 don't lie in the same plane.

(6) Three forces of magnitudes 60 , 120 , K newton meeting at a point they are in equilibrium if measure of the angle between first and second forces 120° and between second and third 150° , then K = ... newton.

(a) 120 (b) $60\sqrt{3}$ (c) 150 (d) 60

(7) Right circular cone , radius length of its base 9 cm. , its height 14 cm. , then volume = ... cm^3 $\left(\pi = \frac{22}{7}\right)$

(a) 3564 (b) 396 (c) 1188 (d) 1782

(8) Regular quadrilateral pyramid length side of its base 10 cm. , its height 12 cm. , then its volume .... cm^3

(a) 300 (b) 400 (c) 600 (d) 120

(9) Two equal forces , magnitude of each 6 gm.wt. and magnitude of their resultant 6 gm.wt. , then measure of the angle between directions of the two forces is ....

(a) 60° (b) 120° (c) 30° (d) 45°

(10) The weight of a body is 10 newton it is placed on smooth inclined plane make an angle 30° to the horizontal , then the component of the weight in perpendicular direction to the plane = ... newton

(a) 5 (b) 10 (c) $5\sqrt{3}$ (d) 2

(11) Ratio between edge length of triangular pyramid of regular faces : its height = ...

(a) $\sqrt{2}:\sqrt{3}$ (b) $\sqrt{3}:\sqrt{2}$ (c) $\sqrt{3}:2$ (d) $\sqrt{3}:3$

(12) Force of magnitude 6 newton act in direction east it is resolved into to perpendicular components so its component in direction of north .... newton.

(a) 0 (b) $3\sqrt{2}$ (c) 6 (d) 3

(13) The minimum value of the resultant of two forces 10 , 7 newton meeting at point = ... newton.

(a) 17 (b) 10 (c) 7 (d) 3

(14) A body of weight 60 newton is placed on smooth plane inclined with the horizontal at angle of measure 30° and tied up by string in direction of line of greatest slope of the plane upward , then value tension of string = ...

(a) 30 (b) $30\sqrt{3}$ (c) 60 (d) $60\sqrt{3}$

(15) $\overline{AB}$ is uniform rod with length 20 cm. and weight 30 newton connected to a hinge on the vertical wall at A if the rod kept in equilibrium horizontally by light string connected to rod at B of length $20\sqrt{2}$ cm. , fixed at point C on the wall just above A , then the reaction of the hinge ....

C
$20\sqrt{2}$ cm.
A 20cm. B

(a) In direction of $\overrightarrow{AB}$ (b) bisect $\overline{BC}$

(c) Its magnitude 15 newton. (d) Its line of action far from wall by 10 cm.

(16) If $\vec{F}$ is in equilibrium with two perpendicular forces of magnitudes 3 , 4 newton , then F = ... newton.

(a) 4 (b) 5 (c) 6 (d) 25

(17) If $\overrightarrow{F_1} = 4\vec{i} + 3\vec{j}$, $\overrightarrow{F_2} = -\vec{i} + 5\vec{j}$, $\overrightarrow{F_3} = 2\vec{i} - 20\vec{j}$ are three forces , then magnitude of resultant =.............. unit force.

(a) 13 (b) 0 (c) 17 (d) 7

(18) Radius length of the base of right circular cone 15 cm. , and length of its drawer 25 cm. , then lateral surface area = ... cm^2.

(a) 375π (b) 15π (c) 25π (d) 187.5π

(19) The forces of magnitudes $7\sqrt{3}$, 7 , K newton act on particle in the directions East , North , 30° South of West respectively if magnitude of the resultant 8 newton in direction 30° North of East , then K = ... newton.

(a) $7\sqrt{3}$ (b) 6 (c) 7 (d) 12

(20) A weight of 100 gm.wt. is suspended by two string of length 30 cm. , 40 cm. , the two other ends are fixed at two points on horizontal line such that the string parsts are perpendicular to each other then magnitude of the tension in first string .... gm.wt.

(a) 80 (b) 100 (c) $60\sqrt{3}$ (d) 60

Second Essay questions

Answer the following questions :

1 A metallic sphere of weight 1.5 kg.wt. and of radius length 25 cm. , is suspended at a point on its surface by a string of length 25 cm. , its other end is fixed at a point in vertical wall to be equilibrium as it rests on the wall , find magnitude of the tension in string and magnitude of the reaction of the wall ?

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2 Find general form of circle equation where its center (1 , 5) and its radius length 6 unit length.



كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



خطوة 1

خطوة 2
اختيار اسم الطابعة بتاعتك

خطوة 3
كتابة الصفحات المراد طباعتها
نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

خطوة 4
اختيار نوع الورق

خطوة 5
اختيار A4

خطوة 6